VOLUME II

COMPUTER PROGRAMS AND RESULTS

PROGRAM 5.1

PERCENTILES OF THE NONCENTRAL $t/\sqrt{N}$

```
title
percentiles of the non-central t / sqrt n

chapter o

u>188
v>16
w>16

vo=.005
v1=.01
v2=.025
v3=.05
v4=.1
v5=.2
v6=.3
v7=.4
v8=.5
v9=.6
v10=.7
v11=.8
v12=.9
v13=.95
v14=.975
v15=.99
v16=.995

i=o(1)188
read(ui)
repeat

kn=o


newline
1065,o,o,5.1
newline 2
space 36
caption
program 5.1 percentiles of the non-central t / sqrt n


read(in)
jn=1(1)in
read(a)
read(b)
read(h)

kn=kn+1
jump 2o,4>kn
newline
1065,o,o,5.1
newline 2
space 36
caption
program 5.1 percentiles of the non-central t / sqrt n
kn=1

2o)c=ø sqrt(2b)
d=ø sqrt(b+1)
w=ad
c=w/c
e=ø sqrt(cc+1)
e=c/e
xn=2b

m=o
n=21
o=168
l=17.

3)j=o
f=-1

1)jump 2,f≥e
j=j+1
f=f+.1
jump 1

2)g=e-f+.1
g=g/.1
i=m(n)o
k=i+j
l=l-1.
v=u(k-1)+guk-gu(k-1)
x=vv/xn
y=ø sqrt(1+cc-x)
y=vy+w
x=-x+1
```

```
wl=y/x
wl=wl/d
repeat

jump 4,0=o

m=147
n=-21
o=o
w=-w
e=-e
jump 3

4)l=o(1)7
wl=-wl
repeat

newline
newline 3
space 51
caption
true p    normal k   sample size
newline
space 49
print(h)2,4
print(a)2,4
v=b+1
print(v)4,4

newline 3
space 48
caption
percentiles  non-central t / sqrt n
newline 3
i=o
j=9

6)space 16
k=i(1)j
print(vk)1,5
repeat
newline
space 16
k=i(1)j
print(wk)1,5
repeat
jump 5,k≥16

newline 2
i=10
j=16
jump 6
5)repeat

end


close
```

```
2.626   2.560   2.538   2.542   2.560   2.579   2.594   2.601   2.600
2.592   2.580   2.563   2.544   2.523   2.503   2.482   2.461   2.440
2.420   2.399   2.380

2.340   2.295   2.282   2.288   2.304   2.323   2.339   2.350   2.355
2.354   2.348   2.339   2.328   2.314   2.298   2.282   2.266   2.249
2.233   2.216   2.199

1.925   1.907   1.905   1.914   1.930   1.946   1.963   1.977   1.987
1.993   1.995   1.995   1.992   1.987   1.979   1.971   1.962   1.952
1.941   1.930   1.919

1.5744   1.5722   1.5792   1.5911   1.6065   1.6230   1.6391   1.6534
1.6657   1.6755   1.6828   1.6874   1.6898   1.6903   1.6896   1.6871
1.6838   1.6796   1.6747   1.6695   1.6638

1.1765   1.1880   1.2024   1.2179   1.2341   1.2503   1.2657   1.2801
1.2931   1.3047   1.3149   1.3236   1.3309   1.3368   1.3413   1.3455
1.3484   1.3507   1.3526   1.3540   1.3554

.7055   .7261   .7463   .7649   .7824   .7987   .8138   .8278   .8409
.8532   .8648   .8759   .8864   .8964   .9062   .9152   .9247   .9341
.9433   .9525   .9623

.3739   .3973   .4192   .4391   .4565   .4729   .4879   .5018   .5148
.5272   .5391   .5508   .5624   .5741   .5859   .5979   .6103   .6234
.6371   .6515   .6668

.0964   .1200   .1413   .1612   .1784   .1946   .2095   .2232   .2361
.2484   .2604   .2724   .2844   .2969   .3098   .3234   .3373   .3530
.3696   .3877   .4067

-.1578   -.1359   -.1158   -.0974   -.0802   -.0648   -.0504   -.0369
-.0242   -.0119    .0000    .0119    .0242    .0369    .0504    .0648
 .0802    .0974    .1158    .1359    .1578
```

```
9.0

 .5978   9.0   .725
 .7225   9.0   .765
 .8965   9.0   .815
1.0669   9.0   .857
1.2591   9.0   .896
1.4985   9.0   .933
1.5718   9.0   .9525
1.8250   9.0   .966
1.9600   9.0   .975


***Z


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```

PROGRAM 5.1 PERCENTILES OF THE NON-CENTRAL T / SQRT N

TRUE P	NORMAL K	SAMPLE SIZE
0.7250	0.5978	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
-0.23460	-0.14586	-0.02267	0.07893	0.19374	0.33299	0.43592	0.52698	0.61569	0.70894

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
0.81489	0.94906	1.15828	1.35794	1.55581	1.82336	2.03494

TRUE P	NORMAL K	SAMPLE SIZE
0.7650	0.7225	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
-0.09638	-0.01344	0.10388	0.20214	0.31507	0.45452	0.55916	0.65271	0.74459	0.84192

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
0.95323	1.09514	1.31860	1.53286	1.74683	2.03668	2.26689

TRUE P	NORMAL K	SAMPLE SIZE
0.8150	0.8965	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.08275	0.16006	0.27152	0.36738	0.47964	0.62132	0.72956	0.82754	0.92467	1.02844

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
1.14823	1.30214	1.54659	1.78279	2.02032	2.34311	2.60010

PROGRAM 5.1 PERCENTILES OF THE NON-CENTRAL T / SQRT N

TRUE P	NORMAL K	SAMPLE SIZE
0.8570	1.0669	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.24524	0.31915	0.42753	0.52284	0.63625	0.78196	0.89486	0.99810	1.10129	1.21215

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
1.34109	1.50779	1.77409	2.03310	2.29477	2.65125	2.93552

TRUE P	NORMAL K	SAMPLE SIZE
0.8960	1.2591	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.41647	0.48830	0.59595	0.69209	0.80850	0.96055	1.07975	1.18983	1.30081	1.42054

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
1.56049	1.74253	2.03485	2.32074	2.61065	3.00627	3.32272

TRUE P	NORMAL K	SAMPLE SIZE
0.9330	1.4985	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.61488	0.68667	0.79618	0.89559	1.01785	1.17991	1.30850	1.42819	1.54956	1.68126

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
1.83593	2.03811	2.36458	2.68532	3.01149	3.45879	3.81652

PROGRAM 5.1 PERCENTILES OF THE NON-CENTRAL T / SQRT N

TRUE P	NORMAL K	SAMPLE SIZE
0.9525	1.5718	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.67327	0.74541	0.85591	0.95664	1.08102	1.24650	1.37820	1.50103	1.62573	1.76127

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
1.92063	2.12919	2.46644	2.79811	3.13562	3.59916	3.96975

TRUE P	NORMAL K	SAMPLE SIZE
0.9660	1.8250	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.86847	0.94274	1.05782	1.16402	1.29658	1.47483	1.61794	1.75214	1.88886	2.03817

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
2.21429	2.44553	2.82094	3.19123	3.56866	4.08907	4.50468

TRUE P	NORMAL K	SAMPLE SIZE
0.9750	1.9600	10.0000

PERCENTILES NON-CENTRAL T / SQRT N

0.00500	0.01000	0.02500	0.05000	0.10000	0.20000	0.30000	0.40000	0.50000	0.60000
0.96812	1.04424	1.16265	1.27249	1.41005	1.59577	1.74535	1.88585	2.02930	2.18621

0.70000	0.80000	0.90000	0.95000	0.97500	0.99000	0.99500
2.37149	2.61509	3.01128	3.40263	3.80182	4.35267	4.79257

PROGRAM 7.1
ITERATED BIAS

PROGRAM 7.1

```
title
iterated bias

chapter 1

u→17
v→17
w→17
x→6
y→119
z→25
a→25
π→38

1)i=1(1)8
πi=0
repeat
o=0
e=.0001

in=1

29)q=21
p=0(17)102
i=1(1)17
on=i+p
wi=yon
repeat
i=1(1)17
j=11
c=wi
jump 20,wi≥.5
c=1-c

20)jump 21,π(j+1)≥c
j=j+1
jump 20

21)a=c-πj
b=π(j+1)-πj
a=a/b
l=j-10
y=πl-aπl+aπ(l+1)
wi=wi+y
jump 24,wi>1.0
jump 25,0>wi
jump 22,wi≥.5
wi=wi-2y

22)repeat

15)o*=o
j=1(1)5
c=xjwj+c
repeat
c=x1w17+x2w16+x3w15+x4w14+x5w13+c
d=jnw6+kw7+jnw8+kw9+jnw10+kw11+jnw12+w13+w5
d=dx6+c
d=d/.99
πq=d
q=q+1
repeat
o=o+1

jump 50,5in≥o
newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 2

in=in+1

50)newline 4
space 58
caption
trial number
space-
print(0)2,0
newline 2
space 28
caption
true p
space 2
i=31(1)37
print(πi)1,5
repeat
newline
space 28
caption
bias
space 4
i=21(1)27
πi=π(i+10)-πi
print(πi)1,5
πi=.5πi
repeat
newline
l=0-
i=2(1)7
a=Ømod(π(i+20))
jump 23,e≥a
l=l+1
πi=πi+π(i+20)

23)repeat
jump 27,l=0
jump 28,0≥55
i=12(1)17
πi=πi-π(i+10)
repeat
jump 29

24)jump 22

25)jump 22


27)newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 8
space 53
caption
- summary of results -
newline 4
space 38
```

```
caption
true p        expected p        bias              error
i=1(1)7
newline 2
space-37
print(π(i+30))1,4
a=π(i+30)-π(i+20)
space-5
print(a)1,6
space-5
print(πi)1,6
space-5
print(π(i+20))1,7
repeat
jump 2

28)newline
caption
too many iterations
jump 2

2)end

close

chapter 0

variables 1

i=0(1)25
zi=.1i
repeat

a0=.0
a1=.0398
a2=.0793
a3=.1179
a4=.1554
a5=.1915
a6=.2257
a7=.2580
a8=.2881
a9=.3159
a10=.3413
a11=.3643
a12=.3849
a13=.4032
a14=.4192
a15=.4332
a16=.4452
a17=.4554
a18=.4641
a19=.4713
a20=.4773
a21=.4821
a22=.4861
a23=.4893
24=.4918
a25=.4038

i=0(1)25
ai=0log(.5-ai)
repeat

u1=.005
u2=.01
u3=.025
u4=.05
u5=.1
u6=.2
u7=.3
u8=.4
u9=.5
u10=.6
u11=.7
u12=.8
u13=.9
u14=.95
u15=.975
u16=.99
u17=.995

x1=.0025
x2=.01
x3=.02
x4=.0375
x5=.025
x6=.10/3
π=0sqrt(2π)
π=1./π

k=2
jn=4

newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 2


p=68
q=15
jumpdown1
p=102
q=17
jumpdown1
q=16
p=85
jumpdown1

newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 2


q=14
p=51
jumpdown1
q=13
p=34
jumpdown1
q=12
p=17
jumpdown1
```

```
newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 2


q=11
p=0
jumpdown1

π18=1.0

i=11(1)18
π(i+20)=πi
repeat


newline
1065,0,0,5.1
newline 2
space 52
caption
program 7.1  iterated  bias
newline 2

across1/1

1)read(an)
read(b)
read(f)

newline 3
space 49
caption
true p    sample size    constant
newline
space 48
print(an)1,4
space 2
print(b)3,4
space 4
print(f)1,4

i=1(1)17
read(vi)
repeat

3)i=1(1)17
u=fvi
u=0mod(u)
jump 12,u≥2.5
j=0

10)jump 11,z(j+1)≥u
j=j+1
jump 10

11)a=aj-a(j+1)
b=zj-z(j+1)
a=a/b
c=aj-azj
d=au+c
d=0exp(d)
wi=1-d
jump 14

12)v=1/u
v=v-vvv+3.vvvvv
w=0exp(-.5uu)
wi=-πwv+1.

14)jump 13,vi>0
wi=1-wi

13)repeat

5)newline 3
space 20
caption
percentile
space 3
m=1(1)9
print(um)1,4
repeat
newline
space 20
caption
k
space 12
m=1(1)9
print(vm)1,4
repeat
newline
space 20
caption
p
space 12
m=1(1)9
print(wm)1,4
repeat
newline 2
space 20
caption
percentile
space 3
m=10(1)17
print(um)1,4
repeat
newline
space 20
caption
k
space 12
m=10(1)17
print(vm)1,4
repeat
newline
space 20
caption
p
space 12
m=10(1)17
print(wm)1,4
repeat
newline 2

i=1(1)17
on=i+p
yon=wi
repeat

πq=an
return


close
```

PROGRAM 7.1 ITERATED BIAS

TRUE P	SAMPLE SIZE	CONSTANT
0.9000	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	0.4358	0.5075	0.6152	0.7115	0.8284	0.9812	1.1012	1.2122	1.3241
P	0.6688	0.6942	0.7309	0.7617	0.7964	0.8368	0.8646	0.8873	0.9073

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	1.4449	1.5862	1.7701	2.0656	2.3547	2.6480	3.0482	3.3685
P	0.9258	0.9437	0.9617	0.9806	0.9907	0.9958	0.9988	0.9996

TRUE P	SAMPLE SIZE	CONSTANT
0.9990	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	1.7530	1.8504	2.0048	2.1512	2.3375	2.5936	2.8029	3.0011	3.2053
P	0.9602	0.9679	0.9776	0.9843	0.9903	0.9951	0.9974	0.9986	0.9993

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	3.4304	3.6974	4.0506	4.6294	5.2047	5.7935	6.6083	7.2597
P	0.9997	0.9999	1.0000	1.0000	1.0000	1.0000	1.0000	1.0000

TRUE P	SAMPLE SIZE	CONSTANT
0.9900	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	1.2309	1.3129	1.4415	1.5621	1.7143	1.9215	2.0895	2.2479	2.4103
P	0.8909	0.9054	0.9253	0.9409	0.9568	0.9727	0.9816	0.9877	0.9920

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	2.5886	2.7995	3.0760	3.5316	3.9813	4.4407	5.0755	5.5824
P	0.9950	0.9974	0.9989	0.9998	1.0000	1.0000	1.0000	1.0000

PROGRAM 7.1 ITERATED BIAS

TRUE P	SAMPLE SIZE	CONSTANT
0.8000	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	0.0278	0.1066	0.2187	0.3160	0.4283	0.5690	0.6760	0.7725	0.8678
P	0.5114	0.5425	0.5868	0.6242	0.6660	0.7155	0.7506	0.7802	0.8074

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	0.9695	1.0865	1.2365	1.4742	1.7033	1.9333	2.2455	2.5939
P	0.8339	0.8614	0.8919	0.9298	0.9557	0.9735	0.9877	0.9951

TRUE P	SAMPLE SIZE	CONSTANT
0.7000	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	-0.3197	-0.2270	-0.0997	0.0044	0.1209	0.2606	0.3629	0.4528	0.5399
P	0.3744	0.4099	0.4603	0.5018	0.5484	0.6031	0.6419	0.6750	0.7056

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	0.6310	0.7341	0.8639	1.0654	1.2566	1.4458	1.7006	1.9011
P	0.7361	0.7687	0.8063	0.8567	0.8956	0.9259	0.9555	0.9714

TRUE P	SAMPLE SIZE	CONSTANT
0.6000	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	-0.6635	-0.5519	-0.4030	-0.2857	-0.1590	-0.0131	0.0896	0.1775	0.2606
P	0.2533	0.2902	0.3435	0.3874	0.4365	0.4946	0.5358	0.5707	0.6031

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	0.3457	0.4400	0.5563	0.7325	0.8957	1.0548	1.2664	1.4307
P	0.6355	0.6703	0.7112	0.7682	0.8148	0.8543	0.8974	0.9238

PROGRAM 7.1 ITERATED BIAS

TRUE P	SAMPLE SIZE	CONSTANT
0.5000	10.0000	1.0000

PERCENTILE	0.0050	0.0100	0.0250	0.0500	0.1000	0.2000	0.3000	0.4000	0.5000
K	-1.0277	-0.8915	-0.7148	-0.5797	-0.4373	-0.2793	-0.1719	-0.0825	0.0000
P	0.1520	0.1863	0.2373	0.2809	0.3307	0.3898	0.4314	0.4669	0.5000

PERCENTILE	0.6000	0.7000	0.8000	0.9000	0.9500	0.9750	0.9900	0.9950
K	0.0825	0.1719	0.2793	0.4373	0.5797	0.7148	0.8915	1.0277
P	0.5331	0.5686	0.6102	0.6693	0.7191	0.7627	0.8137	0.8480

PROGRAM 7.1 ITERATED BIAS

TRIAL NUMBER 1

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00238	-0.00330	-0.00147	0.00344	0.00562	0.00216

TRIAL NUMBER 2

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00178	-0.00257	-0.00144	0.00213	0.00392	0.00140

TRIAL NUMBER 3

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00129	-0.00194	-0.00127	0.00132	0.00292	0.00102

TRIAL NUMBER 4

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00091	-0.00143	-0.00107	0.00080	0.00225	0.00079

TRIAL NUMBER 5

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00063	-0.00104	-0.00088	0.00045	0.00176	0.00064

PROGRAM 7.1 ITERATED BIAS

TRIAL NUMBER 6

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00043	-0.00073	-0.00072	0.00022	0.00139	0.00053

TRIAL NUMBER 7

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00028	-0.00051	-0.00057	0.00007	0.00112	0.00045

TRIAL NUMBER 8

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00017	-0.00034	-0.00045	-0.00002	0.00091	0.00038

TRIAL NUMBER 9

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00012	-0.00024	-0.00036	-0.00009	0.00075	0.00033

TRIAL NUMBER 10

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00008	-0.00016	-0.00030	-0.00014	0.00061	0.00029

PROGRAM 7.1 ITERATED BIAS

TRIAL NUMBER 11

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00006	-0.00013	-0.00027	-0.00018	0.00050	0.00026

TRIAL NUMBER 12

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00005	-0.00010	-0.00024	-0.00022	0.00041	0.00023

TRIAL NUMBER 13

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00004	-0.00006	-0.00018	-0.00020	0.00035	0.00021

TRIAL NUMBER 14

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00004	-0.00006	-0.00019	-0.00024	0.00029	0.00020

TRIAL NUMBER 15

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00003	-0.00005	-0.00017	-0.00022	0.00028	0.00021

PROGRAM 7.1 ITERATED BIAS

TRIAL NUMBER 16

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00003	-0.00004	-0.00015	-0.00021	0.00023	0.00019

TRIAL NUMBER 17

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00003	-0.00003	-0.00012	-0.00019	0.00023	0.00020

TRIAL NUMBER 18

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00003	-0.00003	-0.00013	-0.00021	0.00018	0.00019

TRIAL NUMBER 19

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00002	-0.00002	-0.00010	-0.00016	0.00021	0.00021

TRIAL NUMBER 20

TRUE P	0.50000	0.60000	0.70000	0.80000	0.90000	0.99000	0.99900
BIAS	-0.00000	-0.00002	-0.00002	-0.00011	-0.00019	0.00017	0.00019

PROGRAM 7.1 ITERATED BIAS

- SUMMARY OF RESULTS -

TRUE P	EXPECTED P	BIAS	ERROR
0.5000	0.500000	0.000000	-0.0000000
0.6000	0.600011	-0.003850	-0.0000109
0.7000	0.700011	-0.006047	-0.0000107
0.8000	0.800053	-0.004523	-0.0000526
0.9000	0.900093	0.003632	-0.0000935
0.9900	0.989914	0.011878	0.0000861
0.9990	0.998903	0.004659	0.0000970

PROGRAM 7.2.
SIMULATION NORMAL DOUBLE LIMITS

PROGRAM 7.2

```
title
simulation  normal  double  limits

chapter o

a>53
b>53
c>10
d>100

x=Ørandom(1,o)

a1=o
a2=.1
a3=.2
a4=.3

i=5(1)53
ai=a(i-1)+.05
repeat

i=1(1)53
read(bi)
bi=.01bi
repeat

read(q)

r=1(1)q

newline
1065,o,o,5.1


newline 2
space 42
caption
program 7.2  simulation  normal  double  limits
newline

1)read(w)
read(g)
read(u)
k=1(1)2
i=1(1)100
d=o
e=o

j=1(1)10
cj=Ørandom(x,2)
e=cjcj+e
d=cj+d
repeat

z=dd/10
e=e-z
e=Øsqrt(e/9)
d=d/10
f=d-g
f=f/e
h=u-d
h=h/e
a=f
l=o
n=o

2)jump 3,o≥a
jump 4,a>a53
m=1

6)jump 5,a(m+1)>a
m=1+m
jump 6

5)d=b(m+1)-bm
e=a(m+1)-am
z=a-am
d=dz/e
d=bm+d
jump 8,n=o
d=1-d
n=o

8)jump 7,l>o
f=d
l=1
a=h
jump 2
3)n=1
a=Ømod(a)
jump 2

4)d=o
jump 8

7)d=d+f

10)jump 11,d>1.o
jump 12,o>d
p=o

22)jump 13,d>.5
jump 14,d=o
l=1

16)jump 15,d>b(l+1)
l=1+l
jump 16

15)di=a(l+1)-al
e=d-bl
h=b(l+1)-bl
di=die/h
di=di+al

24)jump 23,p=o
di=-di

23)repeat
newline 4
space 49
caption
true p    lower limit  upper limit
newline 2
space 48
print(w)1,4
space 4
print(g)1,4
space 4
print(u)1,4
newline 3
space 55
```

```
caption
100 ranked values of k
newline 3

17)m=0
l=1(1)99
jump 18,d(l+1)≥dl
a=dl
dl=d(l+1)
d(l+1)=a
m=1

18)repeat
jump >7,m≠0
space 16
i=1(1)100
print(di)1,5
m=m+1
jump 19,10>m
m=0
newline
space 16

19)repeat
repeat
repeat
jump 20

11)newline
caption
p exceeds one

21)newline
print(f)1,4
print(d)1,4
print(n)1,0
newline
i=1(1)10
print(cj)2,4
repeat
jump 20

12)newline
caption
p is negative
jump 21

13)d=1-d
p=1
jump 22

14)di=a53
jump 24

20)end


close



50.00   46.16   42.35   38.60   36.75   34.94   33.13   31.37   29.64
27.94   26.28   24.67   23.10   21.57   20.10   18.67   17.29   15.97
14.71   13.50   12.34   11.24   10.21    9.22    8.30    7.44    6.63
 5.87    5.18    4.54    3.95    3.41    2.93    2.49    2.09    1.75
 1.44    1.17    0.94    0.74    0.58    0.437   0.324   0.233
 0.163   0.109   0.069   0.041   0.023   0.011   0.005   0.001
 0.000


9


0.01   -2.5758   2.5758
0.01   -3.0902   2.3656
0.01   -6.0000   2.3263


0.05   -1.9600   1.9600
0.05   -2.5758   1.6954
0.05   -6.0000   1.6449


0.10   -1.6449   1.6449
0.10   -2.3263   1.3408
0.10   -6.0000   1.2816
***Z

**********
```

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-6.0000	1.2816

100 RANKED VALUES OF K

0.48315	0.52306	0.56153	0.69466	0.70813	0.73159	0.75314	0.77784	0.81146	0.84879
0.86477	0.86517	0.87709	0.89180	0.93337	0.95745	0.97243	0.98551	1.01993	1.02876
1.03684	1.03852	1.04042	1.04273	1.04296	1.05399	1.05964	1.06691	1.14467	1.15166
1.15586	1.15614	1.15718	1.19818	1.20415	1.20953	1.23025	1.23403	1.23743	1.27369
1.28394	1.31564	1.32730	1.33138	1.34322	1.35615	1.36171	1.36302	1.38688	1.38878
1.42097	1.42532	1.43278	1.48631	1.50864	1.51039	1.52690	1.52989	1.53005	1.53063
1.53573	1.54330	1.55849	1.56082	1.60660	1.61529	1.62696	1.63247	1.63558	1.65119
1.65884	1.66736	1.66933	1.75279	1.77853	1.78486	1.84734	1.84748	1.86122	1.86888
1.91084	1.91133	1.93303	1.93768	2.08539	2.11091	2.12925	2.15304	2.21057	2.28482
2.31876	2.33594	2.34998	2.35891	2.63280	2.63991	2.69839	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-6.0000	1.2816

100 RANKED VALUES OF K

0.34459	0.46421	0.58910	0.62798	0.64979	0.65918	0.79435	0.80004	0.82458	0.87986
0.91379	0.91544	0.92049	0.93162	0.93501	0.97922	0.99026	0.99815	1.00475	1.00736
1.01551	1.02337	1.02565	1.04611	1.06774	1.07728	1.08219	1.09566	1.09959	1.10110
1.10659	1.10789	1.11120	1.13057	1.14501	1.15402	1.16142	1.17554	1.18294	1.20502
1.23213	1.23776	1.24309	1.24472	1.25045	1.25443	1.28398	1.30042	1.30816	1.31784
1.31803	1.32992	1.33721	1.34030	1.35189	1.36942	1.38578	1.39574	1.42175	1.42765
1.42836	1.42943	1.43914	1.44615	1.45250	1.46140	1.49218	1.49857	1.55894	1.56303
1.62392	1.66326	1.66344	1.66382	1.67910	1.70956	1.72239	1.73116	1.73319	1.73360
1.73586	1.74247	1.77358	1.80410	1.83057	1.88830	1.89723	1.93361	1.96761	1.99926
2.04580	2.13352	2.15246	2.16223	2.20558	2.20686	2.38837	2.40701	2.48898	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-2.3263	1.3408

100 RANKED VALUES OF K

0.44481	0.49440	0.57642	0.62986	0.68685	0.71932	0.72236	0.80597	0.83449	0.88720
0.88994	0.89435	0.91674	0.92926	0.94981	0.94983	0.95028	0.95354	0.95946	0.96388
0.97515	0.97618	0.98431	0.99158	0.99853	1.03007	1.06844	1.07305	1.07529	1.09725
1.11095	1.11404	1.11827	1.11862	1.12150	1.12427	1.13014	1.13171	1.13172	1.14109
1.14311	1.14473	1.14840	1.18344	1.18561	1.20377	1.21175	1.21732	1.22396	1.22713
1.23650	1.27296	1.28166	1.29594	1.30728	1.31042	1.32988	1.34683	1.35225	1.35655
1.39680	1.39704	1.44222	1.46103	1.46681	1.46884	1.48413	1.51414	1.51488	1.53401
1.53755	1.57097	1.59848	1.59997	1.60779	1.63622	1.66014	1.69006	1.77611	1.78247
1.80761	1.80763	1.81761	1.82031	1.91657	1.93441	2.01410	2.04166	2.05648	2.16527
2.17072	2.20791	2.20994	2.22495	2.31651	2.42294	2.47905	2.51100	2.54498	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-2.3263	1.3408

100 RANKED VALUES OF K

0.40018	0.46681	0.50742	0.58619	0.64825	0.65969	0.70387	0.74213	0.76103	0.76849
0.80054	0.85040	0.85507	0.86997	0.87536	0.89017	0.90165	0.90632	0.91132	0.93137
0.94700	0.95516	0.96009	0.96559	0.97185	0.97231	0.98588	0.98808	0.98880	1.00131
1.01135	1.03010	1.03092	1.04385	1.04831	1.04870	1.07388	1.08237	1.12743	1.16416
1.17503	1.18756	1.22020	1.22229	1.22651	1.24932	1.25248	1.26260	1.29621	1.29918
1.30090	1.30448	1.31446	1.33383	1.33950	1.35069	1.38703	1.39572	1.39591	1.40892
1.41616	1.41803	1.42088	1.47309	1.49840	1.49970	1.50036	1.50303	1.50925	1.51132
1.52510	1.53825	1.54423	1.56621	1.59745	1.63796	1.64082	1.67649	1.70295	1.70764
1.75198	1.75572	1.77082	1.80084	1.84016	1.84525	1.85540	1.89718	1.89748	1.92108
1.97867	1.99314	2.09228	2.12151	2.18091	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-1.6449	1.6449

100 RANKED VALUES OF K

0.55254	0.60389	0.63591	0.70976	0.71820	0.71891	0.76656	0.76954	0.78015	0.80553
0.87317	0.89540	0.91287	0.93714	0.97911	0.98754	0.98998	1.00827	1.05293	1.06749
1.09438	1.10376	1.11597	1.12789	1.13581	1.14051	1.14435	1.19099	1.19329	1.20280
1.21727	1.23804	1.23952	1.25063	1.25509	1.26181	1.28717	1.28872	1.29234	1.29731
1.30847	1.32137	1.32815	1.36167	1.37078	1.39094	1.39158	1.40612	1.41963	1.43376
1.43585	1.44246	1.45198	1.45506	1.45568	1.46306	1.46733	1.46770	1.46841	1.47251
1.48320	1.50177	1.53588	1.55439	1.55851	1.57162	1.59890	1.60482	1.60818	1.61118
1.61447	1.65938	1.66915	1.67965	1.72095	1.72835	1.73711	1.74869	1.76010	1.77983
1.79344	1.83418	1.85589	1.86791	1.88066	1.89138	1.89413	1.93608	1.97374	1.98015
2.08843	2.19175	2.21080	2.26742	2.39620	2.40719	2.43038	2.60467	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.1000	-1.6449	1.6449

100 RANKED VALUES OF K

0.55697	0.55961	0.63415	0.64398	0.65561	0.66626	0.71512	0.75820	0.80259	0.80350
0.80869	0.81392	0.82196	0.83079	0.84177	0.89488	0.91240	0.94746	0.95086	0.95234
0.95618	0.96888	0.97163	0.97294	0.97823	0.99056	0.99249	1.01230	1.01613	1.05336
1.07836	1.08212	1.11323	1.11907	1.12264	1.15051	1.18160	1.18450	1.19825	1.23868
1.24202	1.24745	1.24878	1.25625	1.26148	1.26653	1.29426	1.30107	1.30305	1.30707
1.31930	1.34385	1.35485	1.37915	1.39677	1.40749	1.41123	1.42086	1.42992	1.43595
1.44018	1.44419	1.46622	1.49923	1.49990	1.52196	1.52703	1.55023	1.59503	1.60381
1.60472	1.60599	1.63467	1.63796	1.63981	1.68399	1.68807	1.70932	1.72086	1.73352
1.75644	1.78911	1.81291	1.85826	1.86642	1.87074	1.88017	1.92868	2.03862	2.07463
2.14767	2.19559	2.22222	2.25315	2.36004	2.36907	2.45187	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0500	-6.0000	1.6449

100 RANKED VALUES OF K

0.85888	0.94480	0.95095	0.95553	0.95903	0.96063	0.98971	1.01224	1.01785	1.01925
1.06216	1.13542	1.15028	1.15037	1.16623	1.17724	1.20669	1.21020	1.23123	1.23408
1.24744	1.24903	1.27933	1.27981	1.31884	1.34835	1.35554	1.38416	1.39355	1.43345
1.43908	1.44596	1.47502	1.50057	1.51603	1.51911	1.52401	1.53521	1.54862	1.55300
1.56077	1.61411	1.62026	1.66651	1.70349	1.70361	1.73029	1.74816	1.76776	1.76933
1.77535	1.77706	1.79050	1.79208	1.79840	1.80255	1.80303	1.86043	1.87181	1.87769
1.89551	1.91980	1.94659	1.97320	2.05817	2.07560	2.08074	2.09093	2.09417	2.10090
2.10360	2.11520	2.16084	2.19376	2.20693	2.21689	2.25136	2.28952	2.29092	2.30637
2.35586	2.37351	2.40349	2.45282	2.46131	2.50283	2.57618	2.57908	2.59144	2.60863
2.67776	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0500	-6.0000	1.6449

100 RANKED VALUES OF K

0.71011	0.73084	0.81264	0.86679	0.94239	0.98562	1.05862	1.08140	1.08174	1.08889
1.11815	1.11962	1.12115	1.12415	1.14315	1.14739	1.15272	1.19933	1.20783	1.22384
1.22584	1.23623	1.24055	1.24701	1.27278	1.28473	1.29533	1.34595	1.36144	1.38794
1.39541	1.40904	1.41114	1.42638	1.43651	1.46153	1.46315	1.49631	1.52392	1.52800
1.54405	1.55836	1.57501	1.57695	1.58159	1.58869	1.59218	1.60748	1.61977	1.63081
1.64505	1.64719	1.65012	1.66419	1.68309	1.68761	1.72527	1.72761	1.74771	1.81047
1.83095	1.85753	1.88233	1.90167	1.94696	1.95506	1.96557	1.99518	2.02676	2.04892
2.05374	2.06487	2.07598	2.08070	2.08352	2.08409	2.09675	2.11041	2.11650	2.14679
2.14859	2.24487	2.24525	2.30863	2.35074	2.40496	2.41701	2.59237	2.60836	2.63024
2.66660	2.68601	2.70577	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0500	-2.5758	1.6954

100 RANKED VALUES OF K

0.83971	0.90584	0.91334	1.01914	1.02723	1.08765	1.12244	1.15174	1.16831	1.17735
1.19495	1.19685	1.19721	1.20886	1.21031	1.21206	1.22636	1.25484	1.25655	1.25890
1.26477	1.27367	1.28442	1.33249	1.34007	1.35499	1.35751	1.36453	1.36846	1.37777
1.39897	1.40718	1.41122	1.41194	1.42636	1.42773	1.42837	1.44105	1.44900	1.45828
1.46485	1.48894	1.49161	1.50391	1.51800	1.53852	1.55641	1.56956	1.60376	1.61646
1.64805	1.67124	1.68601	1.70439	1.73786	1.74412	1.75665	1.76507	1.78892	1.79318
1.80953	1.82133	1.84446	1.86535	1.87186	1.91704	1.94716	1.95806	1.97789	2.01527
2.03648	2.06583	2.07853	2.09614	2.10590	2.12795	2.14024	2.15146	2.16700	2.18716
2.22192	2.22871	2.27381	2.28816	2.32220	2.36683	2.38844	2.38881	2.40770	2.44881
2.54130	2.54296	2.55644	2.65724	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0500	-2.5758	1.6954

100 RANKED VALUES OF K

0.67362	0.89333	0.89457	0.98935	1.06141	1.08692	1.10107	1.14588	1.15212	1.18481
1.22394	1.23326	1.24553	1.25228	1.29308	1.39945	1.42392	1.46298	1.46596	1.47219
1.47365	1.48330	1.49578	1.49681	1.50856	1.51229	1.51634	1.55254	1.55659	1.58059
1.59289	1.59777	1.61257	1.61546	1.61570	1.63983	1.65715	1.67321	1.67868	1.69582
1.69628	1.69918	1.70103	1.71019	1.72587	1.72605	1.73054	1.73638	1.75000	1.75372
1.77986	1.78266	1.79324	1.79697	1.81361	1.82106	1.87374	1.88164	1.89010	1.89553
1.89907	1.92383	1.94063	1.94085	1.95343	1.96026	1.96574	1.98730	1.99528	2.03846
2.04805	2.05542	2.05644	2.07374	2.07944	2.09566	2.12206	2.13352	2.18238	2.20723
2.22276	2.26693	2.30618	2.33246	2.37473	2.38074	2.38274	2.42137	2.42346	2.44240
2.50772	2.57476	2.66102	2.74417	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P LOWER LIMIT UPPER LIMIT

0.0500 -1.9600 1.9600

100 RANKED VALUES OF K

0.53452	0.62676	0.91559	0.93508	0.94855	1.00188	1.01221	1.01263	1.02491	1.05991
1.07366	1.07446	1.08648	1.10367	1.13686	1.14397	1.18843	1.19412	1.21627	1.24338
1.24688	1.25041	1.27623	1.29098	1.31142	1.31813	1.33617	1.34336	1.35217	1.35844
1.37012	1.37850	1.38566	1.39169	1.39584	1.40641	1.40853	1.42082	1.46417	1.47455
1.48032	1.53764	1.53768	1.54407	1.59623	1.59767	1.60866	1.61330	1.63712	1.64419
1.64635	1.66229	1.68775	1.72567	1.72645	1.74616	1.82689	1.84104	1.86090	1.86701
1.86848	1.87059	1.92837	1.92855	2.00099	2.00715	2.05256	2.08351	2.08797	2.09066
2.09112	2.09659	2.10014	2.10498	2.11964	2.13212	2.15560	2.15722	2.16102	2.21467
2.22141	2.23350	2.28727	2.30328	2.34948	2.37095	2.43565	2.44327	2.53119	2.66247
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P LOWER LIMIT UPPER LIMIT

0.0500 -1.9600 1.9600

100 RANKED VALUES OF K

0.86648	0.99758	1.03603	1.05882	1.05951	1.06136	1.08145	1.08537	1.08585	1.08683
1.08894	1.13302	1.14298	1.14370	1.16190	1.16636	1.18855	1.18927	1.20620	1.23059
1.24508	1.26832	1.27092	1.30930	1.33160	1.33866	1.34177	1.35089	1.36640	1.39126
1.39366	1.39958	1.44024	1.44455	1.44521	1.44845	1.45341	1.47894	1.48215	1.48608
1.48666	1.49791	1.51422	1.52771	1.52833	1.53520	1.53598	1.54690	1.54953	1.57013
1.57699	1.59215	1.64044	1.65154	1.69037	1.69391	1.70260	1.71678	1.73486	1.73791
1.74016	1.75232	1.76372	1.76626	1.78524	1.80773	1.82438	1.83057	1.84889	1.84891
1.84972	1.85004	1.85579	1.85637	1.86488	1.86984	1.88463	2.02843	2.09642	2.11556
2.13230	2.15671	2.18369	2.24313	2.33133	2.35411	2.35774	2.45933	2.47109	2.48347
2.51186	2.54871	2.55144	2.58763	2.62232	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-6.0000	2.3263

100 RANKED VALUES OF K

1.25262	1.28848	1.31738	1.32788	1.49260	1.53643	1.57132	1.61271	1.61475	1.67059
1.68942	1.77548	1.81985	1.82258	1.84245	1.85529	1.88776	1.89579	1.92104	1.92155
1.94453	1.96831	1.98097	2.01929	2.04151	2.04905	2.07059	2.07472	2.07486	2.10426
2.18460	2.19343	2.21634	2.21800	2.23271	2.23578	2.25146	2.29004	2.29292	2.29407
2.30418	2.32692	2.32692	2.33139	2.34476	2.35976	2.39063	2.40214	2.40479	2.41213
2.41856	2.43472	2.45763	2.45848	2.48593	2.49054	2.50978	2.52582	2.53036	2.53548
2.54088	2.54415	2.54620	2.55045	2.60705	2.62717	2.67825	2.68247	2.69437	2.73021
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-6.0000	2.3263

100 RANKED VALUES OF K

1.18662	1.32670	1.44312	1.51061	1.55703	1.55978	1.57233	1.58017	1.58349	1.58365
1.60126	1.69083	1.76411	1.82960	1.83812	1.84449	1.85424	1.87913	1.89179	1.89361
1.97302	1.98308	1.99723	2.01067	2.06144	2.08503	2.09167	2.09691	2.11025	2.14302
2.15898	2.20255	2.20722	2.22863	2.23425	2.27559	2.28022	2.28299	2.29272	2.29333
2.30978	2.32528	2.32691	2.33343	2.33646	2.34401	2.38882	2.39335	2.40683	2.40924
2.41822	2.43168	2.43329	2.43419	2.46185	2.46307	2.49493	2.50675	2.51736	2.52318
2.54628	2.59207	2.62718	2.65214	2.66392	2.66419	2.69913	2.72081	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-3.0902	2.3656

100 RANKED VALUES OF K

1.01011	1.29019	1.29165	1.50441	1.53074	1.60726	1.61713	1.63542	1.63585	1.63870
1.64784	1.66364	1.71932	1.72806	1.79565	1.82375	1.82870	1.85633	1.89940	1.93035
1.96686	1.97082	1.98995	2.00268	2.00454	2.01113	2.02951	2.02990	2.05875	2.08526
2.11737	2.12616	2.19408	2.20218	2.23093	2.24499	2.25793	2.27116	2.28345	2.29784
2.32616	2.36440	2.37395	2.37807	2.38032	2.38512	2.41229	2.41756	2.49684	2.52492
2.52975	2.56319	2.58451	2.58607	2.59265	2.61501	2.64573	2.64985	2.65420	2.68188
2.68750	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-3.0902	2.3656

100 RANKED VALUES OF K

1.05794	1.14861	1.35675	1.44794	1.46895	1.50974	1.56950	1.58168	1.62777	1.68616
1.75762	1.83450	1.84217	1.85040	1.86388	1.86782	1.87449	1.87905	1.89099	1.91427
1.92383	1.92788	1.94930	1.98652	2.00255	2.05202	2.07203	2.07773	2.07988	2.08047
2.08763	2.14940	2.15244	2.15764	2.16479	2.16939	2.18515	2.19236	2.20433	2.22477
2.23103	2.25191	2.28698	2.29387	2.29566	2.31489	2.35764	2.40652	2.42149	2.43179
2.43819	2.46129	2.47450	2.48221	2.50179	2.52720	2.53022	2.57198	2.58954	2.59087
2.59319	2.59560	2.61097	2.63651	2.67171	2.74131	2.74376	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 7.2 SIMULATION NORMAL DOUBLE LIMITS

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-2.5758	2.5758

100 RANKED VALUES OF K

1.49994	1.62130	1.62198	1.67522	1.71487	1.73491	1.77031	1.79976	1.82363	1.82821
1.82962	1.85959	1.89975	1.90477	1.91691	1.93684	1.94360	1.95050	1.95063	1.95622
1.97298	2.01245	2.01301	2.02818	2.04090	2.04347	2.07883	2.08048	2.08081	2.09600
2.10466	2.13832	2.16244	2.16294	2.18056	2.18336	2.19576	2.19950	2.23669	2.25750
2.26218	2.27616	2.29286	2.30311	2.30896	2.32519	2.34118	2.36102	2.37044	2.37521
2.38194	2.42607	2.44183	2.47216	2.48120	2.48764	2.49204	2.51644	2.54964	2.55738
2.57017	2.58976	2.59341	2.59486	2.60588	2.62632	2.63696	2.63765	2.71850	2.72391
2.73251	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

TRUE P	LOWER LIMIT	UPPER LIMIT
0.0100	-2.5758	2.5758

100 RANKED VALUES OF K

1.30428	1.30550	1.31117	1.38512	1.42350	1.49627	1.52221	1.56475	1.61222	1.73942
1.77850	1.78641	1.80438	1.84138	1.84348	1.85596	1.88323	1.91418	1.92092	1.93363
2.00792	2.01888	2.02984	2.03925	2.04911	2.05545	2.06246	2.06770	2.07247	2.08829
2.13105	2.14895	2.15437	2.16790	2.17905	2.18384	2.20747	2.23940	2.23963	2.24518
2.25378	2.26647	2.26727	2.27065	2.28016	2.29095	2.29310	2.32891	2.36034	2.38653
2.38774	2.42654	2.47241	2.47615	2.51142	2.52021	2.52207	2.52231	2.52392	2.52566
2.54281	2.55546	2.58840	2.59396	2.59493	2.61827	2.62857	2.63404	2.64160	2.66700
2.67678	2.67904	2.73744	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000
2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000	2.75000

PROGRAM 8.1
NORMAL RELIABILITY LIKELIHOOD CONTOURS

PROGRAM 8.1

```
title
normal  reliability  likelihood  contours


chapter 0

a→100
b→7
c→5
d→2
e→2
f→2
g→4
u→16

read(x)
read(v)
read(n)
read(b)
read(in)

i=1(1)4
read(gi)
repeat

f1=1.0
f2=-1.0


jn=0

10)newline
1065,0,0,5.1
newline 2
space 39
caption
program 8.1  normal  reliability  likelihood  contours
newline 2
space 54
caption
sample  average
print(x)2,5
newline
newline
space 40
caption
sqrt  of  unbiased  estimate  of  variance
print(v)3,5
newline
newline
space 57
caption
sample  size
print(n)3,1
newline
newline
space 44
caption
unbiased  estimate  of  reliability
print(b)3,4

mn=29


newline
newline
space 57
caption
split 1   p - 0.0    split 2 .5p - .5p    split 3 .1p - .9p
newline
newline
space 16
caption
left - right limits
space 23
caption
zero - infinity
space 3
i=1(1)2
print(gi)2,4
repeat
space 1

i=3(1)4
print(gi)2,4
repeat
newline
newline
space 16
caption
contour    sigma     mu one    mu two    left 1    right 1
caption
    left 2    right 2    left 3    right 3
newline 2
```

```
jump 11,jn=1

i=1(1)in
read(ai)
repeat

11)z=0.398942280 4i=1(1)in

a=0sqrt(1-1/n)
a=av
g=aa+xx
b=0log(z/a)
b=0exp(nb)
c=0exp(-n/2)

h=bc


u1=0.01103
u2=0.05
u3=0.10
u4=0.13537
u5=0.50
u6=0.60667
u7=0.70
u8=0.80
u9=0.90
u10=0.95
u11=0.96
u12=0.97
u13=0.98
u14=0.99
u15=0.995
u16=0.999


b0= 0.70710656
b1= 0.225836846
b2=-0.252128668
b3= 1.259695130
b4=-1.287822453
b5= 0.94064607
b6= 0.5641896
b7= 0.3275911
```

```
z=0log(1/z)
z=0exp(nz)

b=-2x

kn=1

i=1(1)in

k=1(1)16

jump 51,kn>mn
jump 50
51)newline
1065,0,0,5.1
newline 2
space 39
caption
program 8.1  normal  reliability  likelihood  contours
newline 3
space 16
caption
contour    sigma     mu one    mu two    left 1    right 1
caption
    left 2    right 2    left 3    right 3
newline 2

kn=1

mn=40


50)c=0log(ai)
c=0exp(nc)
c=0log(zcukh)

c=2aiaic/n+g

d=bb-4c
jump 1,0>d
d=0sqrt(d)
e=-b/2+d/2
f=-b/2-d/2

newline
```

```
kn=kn+1

space 15
print(uk)1,5
print(ai)1,5
print(f)1,5
print(e)1,5

j=0


a=0mod(f)

5)a=abo/ai

u=1+ab7


u=0log(1/u)
l=1(1)5
cl=0exp(lu)
repeat

u=b1c1+b2c2+b3c3+b4c4+b5c5
a=0exp(-aa)
a=1-uab6
jump 15,j=2
jump 2,j>0
jump 3,0>f

4)space
print(a)1,5
a=0mod(e)
j=1
jump 5

2)jump 6,0>e

7)print(a)1,5
jump 8

6)a=1-a
jump 7

3)a=1-a
jump 4
```

```
8)j=2
e1=f
e2=e
d1=g1
d2=g2

space

18)m=2(-1)1
an=0
nn=1(1)2
bn=fnnem-fnndnn
a=Ømod(bn)
jump 5

15)jump 16,bn>0

17)an=an+a
repeat
an=1-an

40)print(an)1,5
repeat
jump 19,d1=g3
space
d1=g3
d2=g4
jump 18

16)a=1-a
jump 17


19)repeat

1)jump 60,k=1
newline
kn=kn+1

60)repeat
```

```
newline 5
space 38
caption
maximum value of likelihood function
space 3
print(h)0,5


jump 12,jn=1
jn=1
X=2X
V=2V
b=0.99

i=1(1)4
gi=2gi
repeat

i=1(1)in
ai=2ai
repeat

jump 10


12)end

close

→


2.036      1.0      10.0      0.99      38


-0.1407     4.2127     -0.374     4.096


0.10   0.20   0.30   0.40   0.50   0.60   0.70   0.80   0.90
0.91   0.92   0.93   0.94   0.95   0.96   0.97   0.98   0.99
1.00   1.01   1.02   1.03   1.04   1.05   1.06   1.07   1.08   1.09
1.10   1.20   1.30   1.40   1.50   1.60   1.70   1.80   1.90   2.00

***Z
```

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

SAMPLE AVERAGE 2.03600

SQRT OF UNBIASED ESTIMATE OF VARIANCE 1.00000

SAMPLE SIZE 10.0

UNBIASED ESTIMATE OF RELIABILITY 0.9900

				SPLIT 1 P - 0.0		SPLIT 2 .5P - .5P		SPLIT 3 .1P - .9P	
LEFT - RIGHT LIMITS				ZERO - INFINITY		-0.1407	4.2127	-0.3740	4.0960
CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	0.60000	1.69780	2.37420	0.99767	0.99996	0.99889	0.99889	0.99794	0.99969
0.05000	0.60000	1.96145	2.11055	0.99946	0.99978	0.99968	0.99968	0.99951	0.99976
0.01103	0.70000	1.46188	2.61012	0.98162	0.99990	0.98893	0.98893	0.98310	0.99555
0.05000	0.70000	1.60998	2.46202	0.98927	0.99978	0.99371	0.99371	0.99018	0.99751
0.10000	0.70000	1.69900	2.37300	0.99239	0.99965	0.99554	0.99554	0.99304	0.99816
0.13537	0.70000	1.74636	2.32564	0.99370	0.99955	0.99628	0.99628	0.99422	0.99838
0.01103	0.80000	1.30449	2.76751	0.94851	0.99973	0.96444	0.96444	0.95156	0.98181
0.05000	0.80000	1.45149	2.62051	0.96519	0.99947	0.97644	0.97644	0.96734	0.98828
0.10000	0.80000	1.53308	2.53892	0.97234	0.99925	0.98139	0.98139	0.97406	0.99076
0.13537	0.80000	1.57323	2.49877	0.97538	0.99911	0.98344	0.98344	0.97690	0.99173
0.50000	0.80000	1.81940	2.25260	0.98852	0.99757	0.99147	0.99147	0.98888	0.99473
0.60667	0.80000	1.88713	2.18487	0.99084	0.99684	0.99255	0.99255	0.99086	0.99477
0.70000	0.80000	1.97397	2.09803	0.99320	0.99564	0.99333	0.99333	0.99275	0.99434
0.01103	0.90000	1.18424	2.88776	0.90588	0.99933	0.92913	0.92913	0.91014	0.95770
0.05000	0.90000	1.34271	2.72929	0.93214	0.99879	0.94963	0.94963	0.93528	0.97066
0.10000	0.90000	1.42907	2.64293	0.94384	0.99834	0.95845	0.95845	0.94639	0.97591
0.13537	0.90000	1.47093	2.60107	0.94891	0.99807	0.96217	0.96217	0.95117	0.97805
0.50000	0.90000	1.70793	2.36407	0.97113	0.99569	0.97732	0.97732	0.97167	0.98566
0.60667	0.90000	1.75977	2.31223	0.97473	0.99490	0.97943	0.97943	0.97484	0.98641
0.70000	0.90000	1.80551	2.26649	0.97758	0.99410	0.98097	0.98097	0.97729	0.98681
0.80000	0.90000	1.85854	2.21346	0.98054	0.99304	0.98239	0.98239	0.97975	0.98698
0.90000	0.90000	1.92460	2.14740	0.98376	0.99148	0.98362	0.98362	0.98227	0.98676
0.95000	0.90000	1.97557	2.09643	0.98592	0.99008	0.98418	0.98418	0.98382	0.98625
0.96000	0.90000	1.99178	2.08022	0.98655	0.98959	0.98429	0.98429	0.98425	0.98602
0.97000	0.90000	2.01037	2.05263	0.98758	0.98872	0.98440	0.98440	0.98490	0.98557

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	0.91000	1.17372	2.89828	0.90144	0.99928	0.92527	0.92527	0.90578	0.95485
0.05000	0.91000	1.33372	2.73828	0.92862	0.99869	0.94663	0.94663	0.93184	0.96851
0.10000	0.91000	1.42086	2.65114	0.94078	0.99821	0.95584	0.95584	0.94339	0.97407
0.13537	0.91000	1.46307	2.60893	0.94606	0.99793	0.95974	0.95974	0.94836	0.97634
0.50000	0.91000	1.70156	2.37044	0.96925	0.99540	0.97564	0.97564	0.96975	0.98447
0.60667	0.91000	1.75348	2.31852	0.97300	0.99458	0.97786	0.97786	0.97306	0.98528
0.70000	0.91000	1.79910	2.27290	0.97598	0.99375	0.97948	0.97948	0.97562	0.98573
0.80000	0.91000	1.85159	2.22041	0.97906	0.99266	0.98098	0.98098	0.97817	0.98595
0.90000	0.91000	1.91559	2.15641	0.98236	0.99110	0.98228	0.98228	0.98076	0.98578
0.95000	0.91000	1.96155	2.11045	0.98444	0.98981	0.98288	0.98288	0.98228	0.98536
0.96000	0.91000	1.97428	2.09772	0.98498	0.98942	0.98299	0.98299	0.98265	0.98521
0.97000	0.91000	1.99025	2.08175	0.98563	0.98892	0.98310	0.98310	0.98309	0.98498
0.98000	0.91000	2.01614	2.05586	0.98664	0.98806	0.98322	0.98322	0.98373	0.98455
0.01103	0.92000	1.16345	2.90855	0.89700	0.99922	0.92138	0.92138	0.90142	0.95194
0.05000	0.92000	1.32502	2.74698	0.92510	0.99859	0.94359	0.94359	0.92837	0.96631
0.10000	0.92000	1.41298	2.65902	0.93771	0.99808	0.95320	0.95320	0.94036	0.97218
0.13537	0.92000	1.45558	2.61642	0.94319	0.99777	0.95727	0.95727	0.94553	0.97458
0.50000	0.92000	1.69584	2.37616	0.96736	0.99510	0.97393	0.97393	0.96782	0.98323
0.60667	0.92000	1.74795	2.32405	0.97128	0.99423	0.97627	0.97627	0.97127	0.98411
0.70000	0.92000	1.79362	2.27838	0.97439	0.99337	0.97797	0.97797	0.97393	0.98460
0.80000	0.92000	1.84588	2.22612	0.97759	0.99223	0.97954	0.97954	0.97659	0.98486
0.90000	0.92000	1.90869	2.16331	0.98099	0.99065	0.98091	0.98091	0.97926	0.98474
0.95000	0.92000	1.95201	2.11999	0.98307	0.98940	0.98154	0.98154	0.98078	0.98438
0.96000	0.92000	1.96333	2.10867	0.98358	0.98905	0.98166	0.98166	0.98114	0.98425
0.97000	0.92000	1.97661	2.09539	0.98416	0.98862	0.98178	0.98178	0.98153	0.98407
0.98000	0.92000	1.99368	2.07832	0.98488	0.98806	0.98190	0.98190	0.98201	0.98381
0.99000	0.92000	2.02748	2.04452	0.98623	0.98687	0.98201	0.98201	0.98284	0.98320
0.01103	0.93000	1.15342	2.91858	0.89256	0.99915	0.91746	0.91746	0.89705	0.94897
0.05000	0.93000	1.31662	2.75538	0.92157	0.99848	0.94052	0.94052	0.92490	0.96406
0.10000	0.93000	1.40544	2.66656	0.93463	0.99793	0.95053	0.95053	0.93732	0.97024
0.13537	0.93000	1.44844	2.62356	0.94032	0.99761	0.95477	0.95477	0.94269	0.97277
0.50000	0.93000	1.69074	2.38126	0.96547	0.99477	0.97219	0.97219	0.96587	0.98195
0.60667	0.93000	1.74316	2.32884	0.96956	0.99386	0.97464	0.97464	0.96947	0.98289
0.70000	0.93000	1.78901	2.28299	0.97280	0.99295	0.97643	0.97643	0.97224	0.98343
0.80000	0.93000	1.84131	2.23069	0.97614	0.99177	0.97808	0.97808	0.97501	0.98372
0.90000	0.93000	1.90359	2.16841	0.97966	0.99014	0.97952	0.97952	0.97777	0.98364
0.95000	0.93000	1.94556	2.12644	0.98178	0.98889	0.98017	0.98017	0.97932	0.98331
0.96000	0.93000	1.95620	2.11580	0.98229	0.98855	0.98030	0.98030	0.97967	0.98319

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.97000	0.93000	1.96836	2.10364	0.98285	0.98815	0.98042	0.98042	0.98006	0.98303
0.98000	0.93000	1.98307	2.08893	0.98351	0.98765	0.98055	0.98055	0.98050	0.98283
0.99000	0.93000	2.00367	2.06833	0.98440	0.98693	0.98067	0.98067	0.98106	0.98249
0.99500	0.93000	2.02283	2.04917	0.98519	0.98622	0.98073	0.98073	0.98154	0.98212
0.01103	0.94000	1.14362	2.92838	0.88812	0.99908	0.91353	0.91353	0.89269	0.94595
0.05000	0.94000	1.30850	2.76350	0.91804	0.99836	0.93742	0.93742	0.92142	0.96175
0.10000	0.94000	1.39822	2.67378	0.93155	0.99778	0.94782	0.94782	0.93427	0.96826
0.13537	0.94000	1.44166	2.63034	0.93745	0.99743	0.95225	0.95225	0.93983	0.97092
0.50000	0.94000	1.68622	2.38578	0.96358	0.99443	0.97043	0.97043	0.96391	0.98062
0.60667	0.94000	1.73907	2.33293	0.96785	0.99346	0.97299	0.97299	0.96765	0.98163
0.70000	0.94000	1.78524	2.28676	0.97123	0.99251	0.97486	0.97486	0.97054	0.98221
0.80000	0.94000	1.83780	2.23420	0.97471	0.99127	0.97658	0.97658	0.97342	0.98254
0.90000	0.94000	1.90010	2.17190	0.97838	0.98957	0.97809	0.97809	0.97629	0.98248
0.95000	0.94000	1.94158	2.13042	0.98056	0.98829	0.97878	0.97878	0.97788	0.98216
0.96000	0.94000	1.95195	2.12005	0.98108	0.98794	0.97892	0.97892	0.97824	0.98205
0.97000	0.94000	1.96366	2.10834	0.98165	0.98755	0.97905	0.97905	0.97863	0.98191
0.98000	0.94000	1.97752	2.09448	0.98230	0.98707	0.97918	0.97918	0.97907	0.98171
0.99000	0.94000	1.99568	2.07632	0.98313	0.98641	0.97931	0.97931	0.97960	0.98142
0.99500	0.94000	2.00888	2.06312	0.98371	0.98591	0.97937	0.97937	0.97995	0.98118
0.99900	0.94000	2.03086	2.04114	0.98463	0.98505	0.97942	0.97942	0.98050	0.98073
0.01103	0.95000	1.13404	2.93796	0.88371	0.99901	0.90958	0.90958	0.88833	0.94288
0.05000	0.95000	1.30066	2.77134	0.91452	0.99823	0.93431	0.93431	0.91793	0.95940
0.10000	0.95000	1.39132	2.68068	0.92848	0.99761	0.94510	0.94510	0.93121	0.96623
0.13537	0.95000	1.43521	2.63679	0.93457	0.99724	0.94970	0.94970	0.93697	0.96902
0.50000	0.95000	1.68229	2.38971	0.96171	0.99406	0.96864	0.96864	0.96195	0.97926
0.60667	0.95000	1.73566	2.33634	0.96615	0.99304	0.97131	0.97131	0.96584	0.98033
0.70000	0.95000	1.78228	2.28972	0.96968	0.99203	0.97327	0.97327	0.96885	0.98095
0.80000	0.95000	1.83532	2.23668	0.97331	0.99072	0.97507	0.97507	0.97184	0.98132
0.90000	0.95000	1.89811	2.17389	0.97714	0.98894	0.97665	0.97665	0.97482	0.98127
0.95000	0.95000	1.93980	2.13220	0.97942	0.98760	0.97737	0.97737	0.97647	0.98095
0.96000	0.95000	1.95018	2.12182	0.97996	0.98724	0.97751	0.97751	0.97684	0.98084
0.97000	0.95000	1.96188	2.11012	0.98054	0.98683	0.97765	0.97765	0.97725	0.98069
0.98000	0.95000	1.97564	2.09636	0.98122	0.98633	0.97778	0.97778	0.97769	0.98050
0.99000	0.95000	1.99345	2.07855	0.98206	0.98566	0.97792	0.97792	0.97823	0.98021
0.99500	0.95000	2.00598	2.06602	0.98264	0.98518	0.97799	0.97799	0.97859	0.97998
0.99900	0.95000	2.02269	2.04931	0.98338	0.98450	0.97804	0.97804	0.97902	0.97964
0.01103	0.96000	1.12468	2.94732	0.87931	0.99893	0.90562	0.90562	0.88399	0.93977

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.05000	0.96000	1.29309	2.77891	0.91100	0.99810	0.93117	0.93117	0.91445	0.95701
0.10000	0.96000	1.38473	2.68727	0.92541	0.99744	0.94236	0.94236	0.92816	0.96416
0.13537	0.96000	1.42909	2.64291	0.93171	0.99705	0.94713	0.94713	0.93410	0.96709
0.50000	0.96000	1.67892	2.39308	0.95984	0.99366	0.96683	0.96683	0.95998	0.97786
0.60667	0.96000	1.73292	2.33908	0.96447	0.99259	0.96962	0.96962	0.96403	0.97899
0.70000	0.96000	1.78010	2.29190	0.96815	0.99152	0.97166	0.97166	0.96715	0.97966
0.80000	0.96000	1.83383	2.23817	0.97195	0.99013	0.97354	0.97354	0.97027	0.98005
0.90000	0.96000	1.89757	2.17443	0.97596	0.98824	0.97519	0.97519	0.97337	0.98000
0.95000	0.96000	1.94010	2.13190	0.97836	0.98682	0.97594	0.97594	0.97510	0.97967
0.96000	0.96000	1.95075	2.12125	0.97892	0.98643	0.97609	0.97609	0.97549	0.97955
0.97000	0.96000	1.96281	2.10919	0.97955	0.98599	0.97623	0.97623	0.97591	0.97940
0.98000	0.96000	1.97712	2.09488	0.98028	0.98545	0.97637	0.97637	0.97638	0.97919
0.99000	0.96000	1.99606	2.07594	0.98120	0.98471	0.97651	0.97651	0.97697	0.97887
0.99500	0.96000	2.01018	2.06182	0.98187	0.98413	0.97658	0.97658	0.97737	0.97860
0.01103	0.97000	1.11555	2.95645	0.87494	0.99885	0.90165	0.90165	0.87966	0.93662
0.05000	0.97000	1.28579	2.78621	0.90751	0.99796	0.92803	0.92803	0.91098	0.95459
0.10000	0.97000	1.37844	2.69356	0.92235	0.99726	0.93960	0.93960	0.92510	0.96205
0.13537	0.97000	1.42330	2.64870	0.92886	0.99684	0.94454	0.94454	0.93124	0.96512
0.50000	0.97000	1.67611	2.39589	0.95800	0.99324	0.96500	0.96500	0.95802	0.97642
0.60667	0.97000	1.73083	2.34117	0.96282	0.99210	0.96791	0.96791	0.96222	0.97762
0.70000	0.97000	1.77870	2.29330	0.96665	0.99097	0.97003	0.97003	0.96547	0.97832
0.80000	0.97000	1.83333	2.23867	0.97062	0.98950	0.97199	0.97199	0.96870	0.97873
0.90000	0.97000	1.89848	2.17352	0.97484	0.98748	0.97371	0.97371	0.97194	0.97869
0.95000	0.97000	1.94253	2.12947	0.97739	0.98593	0.97450	0.97450	0.97376	0.97833
0.96000	0.97000	1.95374	2.11826	0.97800	0.98551	0.97465	0.97465	0.97418	0.97819
0.97000	0.97000	1.96660	2.10540	0.97869	0.98502	0.97480	0.97480	0.97463	0.97802
0.98000	0.97000	1.98228	2.08972	0.97950	0.98439	0.97495	0.97495	0.97515	0.97777
0.99000	0.97000	2.00476	2.06724	0.98062	0.98346	0.97509	0.97509	0.97584	0.97736
0.99500	0.97000	2.03074	2.04126	0.98185	0.98233	0.97517	0.97517	0.97654	0.97679
0.01103	0.98000	1.10662	2.96538	0.87059	0.99876	0.89769	0.89769	0.87536	0.93344
0.05000	0.98000	1.27874	2.79326	0.90403	0.99782	0.92487	0.92487	0.90752	0.95213
0.10000	0.98000	1.37245	2.69955	0.91931	0.99706	0.93683	0.93683	0.92206	0.95991
0.13537	0.98000	1.41784	2.65416	0.92602	0.99662	0.94195	0.94195	0.92839	0.96312
0.50000	0.98000	1.67384	2.39816	0.95618	0.99280	0.96317	0.96317	0.95607	0.97495
0.60667	0.98000	1.72938	2.34262	0.96119	0.99159	0.96618	0.96618	0.96042	0.97621
0.70000	0.98000	1.77807	2.29393	0.96519	0.99038	0.96839	0.96839	0.96379	0.97694
0.80000	0.98000	1.83382	2.23818	0.96934	0.98881	0.97043	0.97043	0.96716	0.97738
0.90000	0.98000	1.90089	2.17111	0.97379	0.98663	0.97222	0.97222	0.97054	0.97732

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.95000	0.98000	1.94729	2.12471	0.97654	0.98492	0.97304	0.97304	0.97247	0.97690
0.96000	0.98000	1.95946	2.11254	0.97722	0.98444	0.97320	0.97320	0.97293	0.97675
0.97000	0.98000	1.97381	2.09819	0.97800	0.98386	0.97335	0.97335	0.97343	0.97653
0.98000	0.98000	1.99244	2.07956	0.97898	0.98308	0.97351	0.97351	0.97404	0.97621
0.01103	0.99000	1.09790	2.97410	0.86628	0.99867	0.89373	0.89373	0.87108	0.93023
0.05000	0.99000	1.27196	2.80004	0.90057	0.99766	0.92171	0.92171	0.90407	0.94963
0.10000	0.99000	1.36675	2.70525	0.91629	0.99686	0.93406	0.93406	0.91903	0.95774
0.13537	0.99000	1.41268	2.65932	0.92320	0.99639	0.93934	0.93934	0.92554	0.96108
0.50000	0.99000	1.67212	2.39988	0.95439	0.99233	0.96132	0.96132	0.95413	0.97345
0.60667	0.99000	1.72859	2.34341	0.95960	0.99104	0.96445	0.96445	0.95863	0.97476
0.70000	0.99000	1.77822	2.29378	0.96377	0.98975	0.96674	0.96674	0.96213	0.97553
0.80000	0.99000	1.83531	2.23669	0.96812	0.98807	0.96887	0.96887	0.96563	0.97598
0.90000	0.99000	1.90489	2.16711	0.97283	0.98570	0.97072	0.97072	0.96918	0.97589
0.95000	0.99000	1.95481	2.11719	0.97584	0.98376	0.97157	0.97157	0.97126	0.97539
0.96000	0.99000	1.96863	2.10337	0.97662	0.98319	0.97174	0.97174	0.97176	0.97519
0.97000	0.99000	1.98593	2.08607	0.97757	0.98245	0.97190	0.97190	0.97235	0.97490
0.98000	0.99000	2.01371	2.05829	0.97903	0.98120	0.97206	0.97206	0.97321	0.97434
0.01103	1.00000	1.08939	2.98261	0.86201	0.99857	0.88977	0.88977	0.86684	0.92700
0.05000	1.00000	1.26542	2.80658	0.89714	0.99750	0.91855	0.91855	0.90064	0.94711
0.10000	1.00000	1.36135	2.71065	0.91330	0.99664	0.93128	0.93128	0.91601	0.95554
0.13537	1.00000	1.40784	2.66416	0.92041	0.99614	0.93674	0.93674	0.92271	0.95902
0.50000	1.00000	1.67094	2.40106	0.95263	0.99183	0.95946	0.95946	0.95220	0.97192
0.60667	1.00000	1.72844	2.34356	0.95805	0.99045	0.96271	0.96271	0.95686	0.97329
0.70000	1.00000	1.77915	2.29285	0.96239	0.98907	0.96509	0.96509	0.96049	0.97409
0.80000	1.00000	1.83784	2.23416	0.96696	0.98726	0.96729	0.96729	0.96414	0.97454
0.90000	1.00000	1.91065	2.16135	0.97198	0.98467	0.96922	0.96922	0.96787	0.97440
0.95000	1.00000	1.96601	2.10599	0.97535	0.98240	0.97010	0.97010	0.97014	0.97377
0.96000	1.00000	1.98305	2.08895	0.97632	0.98164	0.97027	0.97027	0.97074	0.97349
0.97000	1.00000	2.00896	2.06304	0.97773	0.98045	0.97044	0.97044	0.97157	0.97297
0.01103	1.01000	1.08108	2.99092	0.85778	0.99847	0.88583	0.88583	0.86262	0.92374
0.05000	1.01000	1.25914	2.81286	0.89374	0.99732	0.91540	0.91540	0.89723	0.94457
0.10000	1.01000	1.35622	2.71578	0.91033	0.99642	0.92850	0.92850	0.91301	0.95331
0.13537	1.01000	1.40330	2.66870	0.91765	0.99588	0.93413	0.93413	0.91990	0.95693
0.50000	1.01000	1.67030	2.40170	0.95091	0.99129	0.95760	0.95760	0.95028	0.97036
0.60667	1.01000	1.72894	2.34306	0.95654	0.98983	0.96096	0.96096	0.95511	0.97179
0.70000	1.01000	1.78087	2.29113	0.96107	0.98835	0.96342	0.96342	0.95887	0.97261
0.80000	1.01000	1.84146	2.23054	0.96587	0.98639	0.96571	0.96571	0.96267	0.97306

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.90000	1.01000	1.91846	2.15354	0.97125	0.98351	0.96771	0.96771	0.96661	0.97285
0.95000	1.01000	1.98322	2.08878	0.97521	0.98068	0.96862	0.96862	0.96918	0.97197
0.96000	1.01000	2.01051	2.06149	0.97674	0.97938	0.96880	0.96880	0.97007	0.97142
0.01103	1.02000	1.07297	2.99903	0.85358	0.99836	0.88191	0.88191	0.85844	0.92047
0.05000	1.02000	1.25310	2.81890	0.89038	0.99714	0.91225	0.91225	0.89385	0.94201
0.10000	1.02000	1.35138	2.72062	0.90740	0.99618	0.92573	0.92573	0.91003	0.95107
0.13537	1.02000	1.39907	2.67293	0.91491	0.99561	0.93152	0.93152	0.91711	0.95483
0.50000	1.02000	1.67020	2.40180	0.94923	0.99073	0.95574	0.95574	0.94839	0.96877
0.60667	1.02000	1.73011	2.34189	0.95507	0.98916	0.95921	0.95921	0.95338	0.97025
0.70000	1.02000	1.78342	2.28858	0.95981	0.98757	0.96176	0.96176	0.95728	0.97110
0.80000	1.02000	1.84624	2.22576	0.96486	0.98545	0.96412	0.96412	0.96124	0.97154
0.90000	1.02000	1.92876	2.14324	0.97068	0.98219	0.96619	0.96619	0.96542	0.97121
0.95000	1.02000	2.02017	2.05183	0.97618	0.97787	0.96714	0.96714	0.96877	0.96962
0.01103	1.03000	1.06506	3.00694	0.84944	0.99825	0.87801	0.87801	0.85431	0.91719
0.05000	1.03000	1.24731	2.82469	0.88705	0.99695	0.90911	0.90911	0.89050	0.93943
0.10000	1.03000	1.34682	2.72518	0.90449	0.99593	0.92296	0.92296	0.90708	0.94881
0.13537	1.03000	1.39513	2.67687	0.91221	0.99532	0.92892	0.92892	0.91434	0.95270
0.50000	1.03000	1.67065	2.40135	0.94760	0.99013	0.95388	0.95388	0.94652	0.96716
0.60667	1.03000	1.73195	2.34005	0.95367	0.98845	0.95747	0.95747	0.95168	0.96869
0.70000	1.03000	1.78683	2.28517	0.95861	0.98674	0.96010	0.96010	0.95572	0.96956
0.80000	1.03000	1.85228	2.21972	0.96394	0.98442	0.96254	0.96254	0.95985	0.96998
0.90000	1.03000	1.94240	2.12960	0.97034	0.98066	0.96468	0.96468	0.96434	0.96947
0.01103	1.04000	1.05734	3.01466	0.84534	0.99813	0.87412	0.87412	0.85021	0.91389
0.05000	1.04000	1.24175	2.83025	0.88376	0.99675	0.90598	0.90598	0.88718	0.93683
0.10000	1.04000	1.34253	2.72947	0.90163	0.99566	0.92020	0.92020	0.90415	0.94653
0.13537	1.04000	1.39150	2.68050	0.90955	0.99502	0.92632	0.92632	0.91159	0.95055
0.50000	1.04000	1.67166	2.40034	0.94601	0.98950	0.95203	0.95203	0.94468	0.96553
0.60667	1.04000	1.73449	2.33751	0.95232	0.98770	0.95572	0.95572	0.95000	0.96711
0.70000	1.04000	1.79114	2.28086	0.95749	0.98585	0.95844	0.95844	0.95419	0.96798
0.80000	1.04000	1.85973	2.21227	0.96313	0.98330	0.96096	0.96096	0.95851	0.96837
0.90000	1.04000	1.96122	2.11078	0.97034	0.97880	0.96317	0.96317	0.96342	0.96758
0.01103	1.05000	1.04980	3.02220	0.84130	0.99800	0.87027	0.87027	0.84616	0.91059
0.05000	1.05000	1.23643	2.83557	0.88051	0.99654	0.90287	0.90287	0.88389	0.93422
0.10000	1.05000	1.33852	2.73348	0.89881	0.99538	0.91745	0.91745	0.90125	0.94423
0.13537	1.05000	1.38816	2.68384	0.90692	0.99471	0.92374	0.92374	0.90888	0.94839
0.50000	1.05000	1.67324	2.39876	0.94448	0.98883	0.95017	0.95017	0.94286	0.96388

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.60667	1.05000	1.73774	2.33426	0.95104	0.98690	0.95398	0.95398	0.94836	0.96549
0.70000	1.05000	1.79641	2.27559	0.95645	0.98489	0.95678	0.95678	0.95271	0.96638
0.80000	1.05000	1.86878	2.20322	0.96245	0.98206	0.95938	0.95938	0.95722	0.96671
0.90000	1.05000	1.99139	2.08061	0.97106	0.97623	0.96166	0.96166	0.96283	0.96535
0.01103	1.06000	1.04246	3.02954	0.83731	0.99787	0.86644	0.86644	0.84215	0.90729
0.05000	1.06000	1.23134	2.84066	0.87731	0.99632	0.89978	0.89978	0.88064	0.93161
0.10000	1.06000	1.33478	2.73722	0.89603	0.99509	0.91472	0.91472	0.89839	0.94193
0.13537	1.06000	1.38511	2.68689	0.90434	0.99437	0.92117	0.92117	0.90619	0.94622
0.50000	1.06000	1.67539	2.39661	0.94301	0.98812	0.94833	0.94833	0.94108	0.96221
0.60667	1.06000	1.74175	2.33025	0.94983	0.98604	0.95225	0.95225	0.94676	0.96386
0.70000	1.06000	1.80270	2.26930	0.95550	0.98386	0.95513	0.95513	0.95126	0.96474
0.80000	1.06000	1.87973	2.19227	0.96191	0.98069	0.95781	0.95781	0.95601	0.96498
0.01103	1.07000	1.03530	3.03670	0.83337	0.99773	0.86264	0.86264	0.83820	0.90398
0.05000	1.07000	1.22649	2.84551	0.87415	0.99609	0.89670	0.89670	0.87742	0.92898
0.10000	1.07000	1.33131	2.74069	0.89329	0.99479	0.91200	0.91200	0.89556	0.93962
0.13537	1.07000	1.38236	2.68964	0.90181	0.99403	0.91861	0.91861	0.90354	0.94404
0.50000	1.07000	1.67814	2.39386	0.94160	0.98737	0.94650	0.94650	0.93933	0.96052
0.60667	1.07000	1.74654	2.32546	0.94869	0.98512	0.95053	0.95053	0.94519	0.96220
0.70000	1.07000	1.81013	2.26187	0.95465	0.98274	0.95349	0.95349	0.94987	0.96306
0.80000	1.07000	1.89302	2.17898	0.96157	0.97915	0.95625	0.95625	0.95488	0.96319
0.01103	1.08000	1.02833	3.04367	0.82949	0.99759	0.85887	0.85887	0.83429	0.90068
0.05000	1.08000	1.22186	2.85014	0.87105	0.99584	0.89365	0.89365	0.87425	0.92636
0.10000	1.08000	1.32810	2.74390	0.89060	0.99447	0.90930	0.90930	0.89276	0.93730
0.13537	1.08000	1.37990	2.69210	0.89932	0.99366	0.91607	0.91607	0.90092	0.94186
0.50000	1.08000	1.68150	2.39050	0.94026	0.98657	0.94467	0.94467	0.93761	0.95881
0.60667	1.08000	1.75217	2.31983	0.94764	0.98414	0.94881	0.94881	0.94366	0.96051
0.70000	1.08000	1.81880	2.25320	0.95392	0.98152	0.95186	0.95186	0.94853	0.96135
0.80000	1.08000	1.90940	2.16260	0.96147	0.97738	0.95469	0.95469	0.95387	0.96130
0.01103	1.09000	1.02154	3.05046	0.82567	0.99743	0.85514	0.85514	0.83043	0.89739
0.05000	1.09000	1.21747	2.85453	0.86799	0.99559	0.89062	0.89062	0.87111	0.92373
0.10000	1.09000	1.32517	2.74683	0.88796	0.99413	0.90662	0.90662	0.89000	0.93498
0.13537	1.09000	1.37773	2.69427	0.89688	0.99328	0.91355	0.91355	0.89834	0.93966
0.50000	1.09000	1.68550	2.38650	0.93899	0.98572	0.94286	0.94286	0.93594	0.95708
0.60667	1.09000	1.75869	2.31331	0.94668	0.98309	0.94711	0.94711	0.94218	0.95880
0.70000	1.09000	1.82888	2.24312	0.95331	0.98020	0.95024	0.95024	0.94725	0.95959
0.80000	1.09000	1.93032	2.14168	0.96171	0.97528	0.95315	0.95315	0.95301	0.95928

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	1.10000	1.01493	3.05707	0.82191	0.99727	0.85145	0.85145	0.82663	0.89410
0.05000	1.10000	1.21330	2.85870	0.86499	0.99532	0.88762	0.88762	0.86802	0.92110
0.10000	1.10000	1.32250	2.74950	0.88537	0.99378	0.90397	0.90397	0.88728	0.93265
0.13537	1.10000	1.37585	2.69615	0.89449	0.99288	0.91105	0.91105	0.89579	0.93747
0.50000	1.10000	1.69016	2.38184	0.93779	0.98482	0.94107	0.94107	0.93430	0.95534
0.60667	1.10000	1.76617	2.30583	0.94582	0.98197	0.94543	0.94543	0.94076	0.95706
0.70000	1.10000	1.84061	2.23139	0.95286	0.97875	0.94864	0.94864	0.94604	0.95779
0.80000	1.10000	1.95942	2.11258	0.96257	0.97260	0.95162	0.95162	0.95242	0.95700
0.01103	1.20000	0.95839	3.11361	0.78775	0.99527	0.81680	0.81680	0.79168	0.86210
0.05000	1.20000	1.18396	2.88804	0.83809	0.99195	0.85938	0.85938	0.83966	0.89529
0.10000	1.20000	1.31051	2.76149	0.86260	0.98931	0.87894	0.87894	0.86246	0.90967
0.13537	1.20000	1.37334	2.69866	0.87378	0.98774	0.88748	0.88748	0.87265	0.91568
0.50000	1.20000	1.78536	2.28664	0.93160	0.97164	0.92421	0.92421	0.92089	0.93695
0.60667	1.20000	1.95157	2.12043	0.94806	0.96139	0.92962	0.92962	0.93133	0.93672
0.01103	1.30000	0.91861	3.15339	0.76010	0.99236	0.78678	0.78678	0.76247	0.83271
0.05000	1.30000	1.17710	2.89490	0.81739	0.98702	0.83487	0.83487	0.81628	0.87122
0.10000	1.30000	1.32648	2.74552	0.84622	0.98265	0.85726	0.85726	0.84235	0.88800
0.13537	1.30000	1.40270	2.66930	0.85971	0.97998	0.86711	0.86711	0.85416	0.89500
0.01103	1.40000	0.89525	3.17675	0.73874	0.98837	0.76143	0.76143	0.73868	0.80657
0.05000	1.40000	1.19407	2.87793	0.80314	0.98009	0.81427	0.81427	0.79777	0.84956
0.10000	1.40000	1.37484	2.69716	0.83696	0.97298	0.83916	0.83916	0.82701	0.86823
0.13537	1.40000	1.47171	2.60029	0.85342	0.96837	0.85016	0.85016	0.84051	0.87588
0.01103	1.50000	0.88859	3.18341	0.72321	0.98309	0.74036	0.74036	0.71968	0.78378
0.05000	1.50000	1.23824	2.83376	0.79545	0.97057	0.79734	0.79734	0.78373	0.83039
0.10000	1.50000	1.46634	2.60566	0.83585	0.95882	0.82444	0.82444	0.81629	0.85028
0.13537	1.50000	1.60214	2.46986	0.85726	0.95018	0.83646	0.83646	0.83185	0.85795
0.01103	1.60000	0.89955	3.17245	0.71302	0.97630	0.72301	0.72301	0.70478	0.76411
0.05000	1.60000	1.31650	2.75550	0.79469	0.95748	0.78365	0.78365	0.77370	0.81347
0.10000	1.60000	1.63254	2.43946	0.84622	0.93633	0.81271	0.81271	0.81041	0.83327
0.13537	1.60000	1.94810	2.12390	0.88830	0.90782	0.82566	0.82566	0.83189	0.83693
0.01103	1.70000	0.92983	3.14217	0.70780	0.96772	0.70883	0.70883	0.69332	0.74718
0.05000	1.70000	1.44438	2.62762	0.80224	0.93891	0.77272	0.77272	0.76741	0.79820

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	1.80000	0.98225	3.08975	0.70736	0.95697	0.69729	0.69729	0.68477	0.73259
0.05000	1.80000	1.67405	2.39795	0.82382	0.90860	0.76410	0.76410	0.76547	0.78317
0.01103	1.90000	1.06152	3.01048	0.71181	0.94346	0.68794	0.68794	0.67868	0.71991
0.01103	2.00000	1.17630	2.89570	0.72178	0.92617	0.68041	0.68041	0.67476	0.70871

MAXIMUM VALUE OF LIKELIHOOD FUNCTION 1.16524, -6

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

SAMPLE AVERAGE 4.07200

SQRT OF UNBIASED ESTIMATE OF VARIANCE 2.00000

SAMPLE SIZE 10.0

UNBIASED ESTIMATE OF RELIABILITY 0.9900

				SPLIT 1 P - 0.0		SPLIT 2 .5P - .5P		SPLIT 3 .1P - .9P	
LEFT - RIGHT LIMITS				ZERO - INFINITY		-0.2814	8.4254	-0.7480	8.1920
CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	1.20000	3.39560	4.74840	0.99767	0.99996	0.99889	0.99889	0.99794	0.99969
0.05000	1.20000	3.92290	4.22110	0.99946	0.99978	0.99968	0.99968	0.99951	0.99976
0.01103	1.40000	2.92376	5.22024	0.98162	0.99990	0.98893	0.98893	0.98310	0.99555
0.05000	1.40000	3.21995	4.92405	0.98927	0.99978	0.99371	0.99371	0.99018	0.99751
0.10000	1.40000	3.39800	4.74600	0.99239	0.99965	0.99554	0.99554	0.99304	0.99816
0.13537	1.40000	3.49273	4.65127	0.99370	0.99955	0.99628	0.99628	0.99422	0.99838
0.01103	1.60000	2.60898	5.53502	0.94851	0.99973	0.96444	0.96444	0.95156	0.98181
0.05000	1.60000	2.90299	5.24101	0.96519	0.99947	0.97644	0.97644	0.96734	0.98828
0.10000	1.60000	3.06617	5.07783	0.97234	0.99925	0.98139	0.98139	0.97406	0.99076
0.13537	1.60000	3.14645	4.99755	0.97538	0.99911	0.98344	0.98344	0.97690	0.99173
0.50000	1.60000	3.63880	4.50520	0.98852	0.99757	0.99147	0.99147	0.98888	0.99473
0.60667	1.60000	3.77425	4.36975	0.99084	0.99684	0.99255	0.99255	0.99086	0.99477
0.70000	1.60000	3.94795	4.19605	0.99320	0.99564	0.99333	0.99333	0.99275	0.99434
0.01103	1.80000	2.36848	5.77552	0.90588	0.99933	0.92913	0.92913	0.91014	0.95770
0.05000	1.80000	2.68542	5.45858	0.93214	0.99879	0.94963	0.94963	0.93528	0.97066
0.10000	1.80000	2.85815	5.28585	0.94384	0.99834	0.95845	0.95845	0.94639	0.97591
0.13537	1.80000	2.94187	5.20213	0.94891	0.99807	0.96217	0.96217	0.95117	0.97805
0.50000	1.80000	3.41585	4.72815	0.97113	0.99569	0.97732	0.97732	0.97167	0.98566
0.60667	1.80000	3.51953	4.62447	0.97473	0.99490	0.97943	0.97943	0.97484	0.98641
0.70000	1.80000	3.61103	4.53297	0.97758	0.99410	0.98097	0.98097	0.97729	0.98681
0.80000	1.80000	3.71708	4.42692	0.98054	0.99304	0.98239	0.98239	0.97975	0.98698
0.90000	1.80000	3.84920	4.29480	0.98376	0.99148	0.98362	0.98362	0.98227	0.98676
0.95000	1.80000	3.95114	4.19286	0.98592	0.99008	0.98418	0.98418	0.98382	0.98625
0.96000	1.80000	3.98357	4.16043	0.98655	0.98959	0.98429	0.98429	0.98425	0.98602
0.97000	1.80000	4.03875	4.10525	0.98758	0.98872	0.98440	0.98440	0.98490	0.98557

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	1.82000	2.34745	5.79655	0.90144	0.99928	0.92527	0.92527	0.90578	0.95485
0.05000	1.82000	2.66743	5.47657	0.92862	0.99869	0.94663	0.94663	0.93184	0.96851
0.10000	1.82000	2.84171	5.30229	0.94078	0.99821	0.95584	0.95584	0.94339	0.97407
0.13537	1.82000	2.92615	5.21785	0.94606	0.99793	0.95974	0.95974	0.94836	0.97634
0.50000	1.82000	3.40313	4.74087	0.96925	0.99540	0.97564	0.97564	0.96975	0.98447
0.60667	1.82000	3.50695	4.63705	0.97300	0.99458	0.97786	0.97786	0.97306	0.98528
0.70000	1.82000	3.59820	4.54580	0.97598	0.99375	0.97948	0.97948	0.97562	0.98573
0.80000	1.82000	3.70319	4.44081	0.97906	0.99266	0.98098	0.98098	0.97817	0.98595
0.90000	1.82000	3.83118	4.31282	0.98236	0.99110	0.98228	0.98228	0.98076	0.98578
0.95000	1.82000	3.92309	4.22091	0.98444	0.98981	0.98288	0.98288	0.98228	0.98536
0.96000	1.82000	3.94856	4.19544	0.98498	0.98942	0.98299	0.98299	0.98265	0.98521
0.97000	1.82000	3.98050	4.16350	0.98563	0.98892	0.98310	0.98310	0.98309	0.98498
0.98000	1.82000	4.03229	4.11171	0.98664	0.98806	0.98322	0.98322	0.98373	0.98455
0.01103	1.84000	2.32690	5.81710	0.89700	0.99922	0.92138	0.92138	0.90142	0.95194
0.05000	1.84000	2.65005	5.49395	0.92510	0.99859	0.94359	0.94359	0.92837	0.96631
0.10000	1.84000	2.82596	5.31804	0.93771	0.99808	0.95320	0.95320	0.94036	0.97218
0.13537	1.84000	2.91116	5.23284	0.94319	0.99777	0.95727	0.95727	0.94553	0.97458
0.50000	1.84000	3.39168	4.75232	0.96736	0.99510	0.97393	0.97393	0.96782	0.98323
0.60667	1.84000	3.49590	4.64810	0.97128	0.99423	0.97627	0.97627	0.97127	0.98411
0.70000	1.84000	3.58724	4.55676	0.97439	0.99337	0.97797	0.97797	0.97393	0.98460
0.80000	1.84000	3.69176	4.45224	0.97759	0.99223	0.97954	0.97954	0.97659	0.98486
0.90000	1.84000	3.81739	4.32661	0.98099	0.99065	0.98091	0.98091	0.97926	0.98474
0.95000	1.84000	3.90402	4.23998	0.98307	0.98940	0.98154	0.98154	0.98078	0.98438
0.96000	1.84000	3.92665	4.21735	0.98358	0.98905	0.98166	0.98166	0.98114	0.98425
0.97000	1.84000	3.95322	4.19078	0.98416	0.98862	0.98178	0.98178	0.98153	0.98407
0.98000	1.84000	3.98736	4.15664	0.98488	0.98806	0.98190	0.98190	0.98201	0.98381
0.99000	1.84000	4.05496	4.08904	0.98623	0.98687	0.98201	0.98201	0.98284	0.98320
0.01103	1.86000	2.30684	5.83716	0.89256	0.99915	0.91746	0.91746	0.89705	0.94897
0.05000	1.86000	2.63324	5.51076	0.92157	0.99848	0.94052	0.94052	0.92490	0.96406
0.10000	1.86000	2.81088	5.33312	0.93463	0.99793	0.95053	0.95053	0.93732	0.97024
0.13537	1.86000	2.89689	5.24711	0.94032	0.99761	0.95477	0.95477	0.94269	0.97277
0.50000	1.86000	3.38147	4.76253	0.96547	0.99477	0.97219	0.97219	0.96587	0.98195
0.60667	1.86000	3.48631	4.65769	0.96956	0.99386	0.97464	0.97464	0.96947	0.98289
0.70000	1.86000	3.57802	4.56598	0.97280	0.99295	0.97643	0.97643	0.97224	0.98343
0.80000	1.86000	3.68261	4.46139	0.97614	0.99177	0.97808	0.97808	0.97501	0.98372
0.90000	1.86000	3.80719	4.33681	0.97966	0.99014	0.97952	0.97952	0.97777	0.98364
0.95000	1.86000	3.89112	4.25288	0.98178	0.98889	0.98017	0.98017	0.97932	0.98331
0.96000	1.86000	3.91240	4.23160	0.98229	0.98855	0.98030	0.98030	0.97967	0.98319

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.97000	1.86000	3.93672	4.20728	0.98285	0.98815	0.98042	0.98042	0.98006	0.98303
0.98000	1.86000	3.96615	4.17785	0.98351	0.98765	0.98055	0.98055	0.98050	0.98283
0.99000	1.86000	4.00735	4.13665	0.98440	0.98693	0.98067	0.98067	0.98106	0.98249
0.99500	1.86000	4.04565	4.09835	0.98519	0.98622	0.98073	0.98073	0.98154	0.98212
0.01103	1.88000	2.28723	5.85677	0.88812	0.99908	0.91353	0.91353	0.89269	0.94595
0.05000	1.88000	2.61700	5.52700	0.91804	0.99836	0.93742	0.93742	0.92142	0.96175
0.10000	1.88000	2.79644	5.34756	0.93155	0.99778	0.94782	0.94782	0.93427	0.96826
0.13537	1.88000	2.88331	5.26069	0.93745	0.99743	0.95225	0.95225	0.93983	0.97092
0.50000	1.88000	3.37245	4.77155	0.96358	0.99443	0.97043	0.97043	0.96391	0.98062
0.60667	1.88000	3.47813	4.66587	0.96785	0.99346	0.97299	0.97299	0.96765	0.98163
0.70000	1.88000	3.57048	4.57352	0.97123	0.99251	0.97486	0.97486	0.97054	0.98221
0.80000	1.88000	3.67560	4.46840	0.97471	0.99127	0.97658	0.97658	0.97342	0.98254
0.90000	1.88000	3.80020	4.34380	0.97838	0.98957	0.97809	0.97809	0.97629	0.98248
0.95000	1.88000	3.88317	4.26083	0.98056	0.98829	0.97878	0.97878	0.97788	0.98216
0.96000	1.88000	3.90391	4.24009	0.98108	0.98794	0.97892	0.97892	0.97824	0.98205
0.97000	1.88000	3.92733	4.21667	0.98165	0.98755	0.97905	0.97905	0.97863	0.98191
0.98000	1.88000	3.95504	4.18896	0.98230	0.98707	0.97918	0.97918	0.97907	0.98171
0.99000	1.88000	3.99136	4.15264	0.98313	0.98641	0.97931	0.97931	0.97960	0.98142
0.99500	1.88000	4.01776	4.12624	0.98371	0.98591	0.97937	0.97937	0.97995	0.98118
0.99900	1.88000	4.06171	4.08229	0.98463	0.98505	0.97942	0.97942	0.98050	0.98073
0.01103	1.90000	2.26808	5.87592	0.88371	0.99901	0.90958	0.90958	0.88833	0.94288
0.05000	1.90000	2.60132	5.54268	0.91452	0.99823	0.93431	0.93431	0.91793	0.95940
0.10000	1.90000	2.78264	5.36136	0.92848	0.99761	0.94510	0.94510	0.93121	0.96623
0.13537	1.90000	2.87042	5.27358	0.93457	0.99724	0.94970	0.94970	0.93697	0.96902
0.50000	1.90000	3.36458	4.77942	0.96171	0.99406	0.96864	0.96864	0.96195	0.97926
0.60667	1.90000	3.47132	4.67268	0.96615	0.99304	0.97131	0.97131	0.96584	0.98033
0.70000	1.90000	3.56455	4.57945	0.96968	0.99203	0.97327	0.97327	0.96885	0.98095
0.80000	1.90000	3.67063	4.47337	0.97331	0.99072	0.97507	0.97507	0.97184	0.98132
0.90000	1.90000	3.79622	4.34778	0.97714	0.98894	0.97665	0.97665	0.97482	0.98127
0.95000	1.90000	3.87959	4.26441	0.97942	0.98760	0.97737	0.97737	0.97647	0.98095
0.96000	1.90000	3.90036	4.24364	0.97996	0.98724	0.97751	0.97751	0.97684	0.98084
0.97000	1.90000	3.92375	4.22025	0.98054	0.98683	0.97765	0.97765	0.97725	0.98069
0.98000	1.90000	3.95128	4.19272	0.98122	0.98633	0.97778	0.97778	0.97769	0.98050
0.99000	1.90000	3.98690	4.15710	0.98206	0.98566	0.97792	0.97792	0.97823	0.98021
0.99500	1.90000	4.01196	4.13204	0.98264	0.98518	0.97799	0.97799	0.97859	0.97998
0.99900	1.90000	4.04538	4.09862	0.98338	0.98450	0.97804	0.97804	0.97902	0.97964
0.01103	1.92000	2.24937	5.89463	0.87931	0.99893	0.90562	0.90562	0.88399	0.93977

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.05000	1.92000	2.58618	5.55782	0.91100	0.99810	0.93117	0.93117	0.91445	0.95701
0.10000	1.92000	2.76946	5.37454	0.92541	0.99744	0.94236	0.94236	0.92816	0.96416
0.13537	1.92000	2.85819	5.28581	0.93171	0.99705	0.94713	0.94713	0.93410	0.96709
0.50000	1.92000	3.35785	4.78615	0.95984	0.99366	0.96683	0.96683	0.95998	0.97786
0.60667	1.92000	3.46583	4.67817	0.96447	0.99259	0.96962	0.96962	0.96403	0.97899
0.70000	1.92000	3.56020	4.58380	0.96815	0.99152	0.97166	0.97166	0.96715	0.97966
0.80000	1.92000	3.66766	4.47634	0.97195	0.99013	0.97354	0.97354	0.97027	0.98005
0.90000	1.92000	3.79514	4.34886	0.97596	0.98824	0.97519	0.97519	0.97337	0.98000
0.95000	1.92000	3.88020	4.26380	0.97836	0.98682	0.97594	0.97594	0.97510	0.97967
0.96000	1.92000	3.90150	4.24250	0.97892	0.98643	0.97609	0.97609	0.97549	0.97955
0.97000	1.92000	3.92562	4.21838	0.97955	0.98599	0.97623	0.97623	0.97591	0.97940
0.98000	1.92000	3.95424	4.18976	0.98028	0.98545	0.97637	0.97637	0.97638	0.97919
0.99000	1.92000	3.99212	4.15188	0.98120	0.98471	0.97651	0.97651	0.97697	0.97887
0.99500	1.92000	4.02036	4.12364	0.98187	0.98413	0.97658	0.97658	0.97737	0.97860
0.01103	1.94000	2.23109	5.91291	0.87494	0.99885	0.90165	0.90165	0.87966	0.93662
0.05000	1.94000	2.57157	5.57243	0.90751	0.99796	0.92803	0.92803	0.91098	0.95459
0.10000	1.94000	2.75688	5.38712	0.92235	0.99726	0.93960	0.93960	0.92510	0.96205
0.13537	1.94000	2.84661	5.29739	0.92886	0.99684	0.94454	0.94454	0.93124	0.96512
0.50000	1.94000	3.35222	4.79178	0.95800	0.99324	0.96500	0.96500	0.95802	0.97642
0.60667	1.94000	3.46165	4.68235	0.96282	0.99210	0.96791	0.96791	0.96222	0.97762
0.70000	1.94000	3.55740	4.58660	0.96665	0.99097	0.97003	0.97003	0.96547	0.97832
0.80000	1.94000	3.66666	4.47734	0.97062	0.98950	0.97199	0.97199	0.96870	0.97873
0.90000	1.94000	3.79696	4.34704	0.97484	0.98748	0.97371	0.97371	0.97194	0.97869
0.95000	1.94000	3.88506	4.25894	0.97739	0.98593	0.97450	0.97450	0.97376	0.97833
0.96000	1.94000	3.90748	4.23652	0.97800	0.98551	0.97465	0.97465	0.97418	0.97819
0.97000	1.94000	3.93320	4.21080	0.97869	0.98502	0.97480	0.97480	0.97463	0.97802
0.98000	1.94000	3.96455	4.17945	0.97950	0.98439	0.97495	0.97495	0.97515	0.97777
0.99000	1.94000	4.00953	4.13447	0.98062	0.98346	0.97509	0.97509	0.97584	0.97736
0.99500	1.94000	4.06148	4.08252	0.98185	0.98233	0.97517	0.97517	0.97654	0.97679
0.01103	1.96000	2.21324	5.93076	0.87059	0.99876	0.89769	0.89769	0.87536	0.93344
0.05000	1.96000	2.55749	5.58651	0.90403	0.99782	0.92487	0.92487	0.90752	0.95213
0.10000	1.96000	2.74490	5.39910	0.91931	0.99706	0.93683	0.93683	0.92206	0.95991
0.13537	1.96000	2.83567	5.30833	0.92602	0.99662	0.94195	0.94195	0.92839	0.96312
0.50000	1.96000	3.34769	4.79631	0.95618	0.99280	0.96317	0.96317	0.95607	0.97495
0.60667	1.96000	3.45877	4.68523	0.96119	0.99159	0.96618	0.96618	0.96042	0.97621
0.70000	1.96000	3.55614	4.58786	0.96519	0.99038	0.96839	0.96839	0.96379	0.97694
0.80000	1.96000	3.66763	4.47637	0.96934	0.98881	0.97043	0.97043	0.96716	0.97738
0.90000	1.96000	3.80178	4.34222	0.97379	0.98663	0.97222	0.97222	0.97054	0.97732

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.95000	1.96000	3.89458	4.24942	0.97654	0.98492	0.97304	0.97304	0.97247	0.97690
0.96000	1.96000	3.91892	4.22508	0.97722	0.98444	0.97320	0.97320	0.97293	0.97675
0.97000	1.96000	3.94762	4.19638	0.97800	0.98386	0.97335	0.97335	0.97343	0.97653
0.98000	1.96000	3.98488	4.15912	0.97898	0.98308	0.97351	0.97351	0.97404	0.97621
0.01103	1.98000	2.19581	5.94819	0.86628	0.99867	0.89373	0.89373	0.87108	0.93023
0.05000	1.98000	2.54392	5.60008	0.90057	0.99766	0.92171	0.92171	0.90407	0.94963
0.10000	1.98000	2.73351	5.41049	0.91629	0.99686	0.93406	0.93406	0.91903	0.95774
0.13537	1.98000	2.82536	5.31864	0.92320	0.99639	0.93934	0.93934	0.92554	0.96108
0.50000	1.98000	3.34424	4.79976	0.95439	0.99233	0.96132	0.96132	0.95413	0.97345
0.60667	1.98000	3.45718	4.68682	0.95960	0.99104	0.96445	0.96445	0.95863	0.97476
0.70000	1.98000	3.55643	4.58757	0.96377	0.98975	0.96674	0.96674	0.96213	0.97553
0.80000	1.98000	3.67062	4.47338	0.96812	0.98807	0.96887	0.96887	0.96563	0.97598
0.90000	1.98000	3.80978	4.33422	0.97283	0.98570	0.97072	0.97072	0.96918	0.97589
0.95000	1.98000	3.90963	4.23437	0.97584	0.98376	0.97157	0.97157	0.97126	0.97539
0.96000	1.98000	3.93726	4.20674	0.97662	0.98319	0.97174	0.97174	0.97176	0.97519
0.97000	1.98000	3.97185	4.17215	0.97757	0.98245	0.97190	0.97190	0.97235	0.97490
0.98000	1.98000	4.02741	4.11659	0.97903	0.98120	0.97206	0.97206	0.97321	0.97434
0.01103	2.00000	2.17878	5.96522	0.86201	0.99857	0.88977	0.88977	0.86684	0.92700
0.05000	2.00000	2.53085	5.61315	0.89714	0.99750	0.91855	0.91855	0.90064	0.94711
0.10000	2.00000	2.72269	5.42131	0.91330	0.99664	0.93128	0.93128	0.91601	0.95554
0.13537	2.00000	2.81567	5.32833	0.92041	0.99614	0.93674	0.93674	0.92271	0.95902
0.50000	2.00000	3.34188	4.80212	0.95263	0.99183	0.95946	0.95946	0.95220	0.97192
0.60667	2.00000	3.45688	4.68712	0.95805	0.99045	0.96271	0.96271	0.95686	0.97329
0.70000	2.00000	3.55829	4.58571	0.96239	0.98907	0.96509	0.96509	0.96049	0.97409
0.80000	2.00000	3.67568	4.46832	0.96696	0.98726	0.96729	0.96729	0.96414	0.97454
0.90000	2.00000	3.82131	4.32269	0.97198	0.98467	0.96922	0.96922	0.96787	0.97440
0.95000	2.00000	3.93203	4.21197	0.97535	0.98240	0.97010	0.97010	0.97014	0.97377
0.96000	2.00000	3.96610	4.17790	0.97632	0.98164	0.97027	0.97027	0.97074	0.97349
0.97000	2.00000	4.01791	4.12609	0.97773	0.98045	0.97044	0.97044	0.97157	0.97297
0.01103	2.02000	2.16217	5.98183	0.85778	0.99847	0.88583	0.88583	0.86262	0.92374
0.05000	2.02000	2.51828	5.62572	0.89374	0.99732	0.91540	0.91540	0.89723	0.94457
0.10000	2.02000	2.71245	5.43155	0.91033	0.99642	0.92850	0.92850	0.91301	0.95331
0.13537	2.02000	2.80660	5.33740	0.91765	0.99588	0.93413	0.93413	0.91990	0.95693
0.50000	2.02000	3.34060	4.80340	0.95091	0.99129	0.95760	0.95760	0.95028	0.97036
0.60667	2.02000	3.45789	4.68611	0.95654	0.98983	0.96096	0.96096	0.95511	0.97179
0.70000	2.02000	3.56175	4.58225	0.96107	0.98835	0.96342	0.96342	0.95887	0.97261
0.80000	2.02000	3.68291	4.46109	0.96587	0.98639	0.96571	0.96571	0.96267	0.97306

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.90000	2.02000	3.83691	4.30709	0.97125	0.98351	0.96771	0.96771	0.96661	0.97285
0.95000	2.02000	3.96644	4.17756	0.97521	0.98068	0.96862	0.96862	0.96918	0.97197
0.96000	2.02000	4.02103	4.12297	0.97674	0.97938	0.96880	0.96880	0.97007	0.97142
0.01103	2.04000	2.14594	5.99806	0.85358	0.99836	0.88191	0.88191	0.85844	0.92047
0.05000	2.04000	2.50620	5.63780	0.89038	0.99714	0.91225	0.91225	0.89385	0.94201
0.10000	2.04000	2.70277	5.44123	0.90740	0.99618	0.92573	0.92573	0.91003	0.95107
0.13537	2.04000	2.79813	5.34587	0.91491	0.99561	0.93152	0.93152	0.91711	0.95483
0.50000	2.04000	3.34041	4.80359	0.94923	0.99073	0.95574	0.95574	0.94839	0.96877
0.60667	2.04000	3.46022	4.68378	0.95507	0.98916	0.95921	0.95921	0.95338	0.97025
0.70000	2.04000	3.56685	4.57715	0.95981	0.98757	0.96176	0.96176	0.95728	0.97110
0.80000	2.04000	3.69248	4.45152	0.96486	0.98545	0.96412	0.96412	0.96124	0.97154
0.90000	2.04000	3.85751	4.28649	0.97068	0.98219	0.96619	0.96619	0.96542	0.97121
0.95000	2.04000	4.04033	4.10367	0.97618	0.97787	0.96714	0.96714	0.96877	0.96962
0.01103	2.06000	2.13011	6.01389	0.84944	0.99825	0.87801	0.87801	0.85431	0.91719
0.05000	2.06000	2.49461	5.64939	0.88705	0.99695	0.90911	0.90911	0.89050	0.93943
0.10000	2.06000	2.69364	5.45036	0.90449	0.99593	0.92296	0.92296	0.90708	0.94881
0.13537	2.06000	2.79027	5.35373	0.91221	0.99532	0.92892	0.92892	0.91434	0.95270
0.50000	2.06000	3.34131	4.80269	0.94760	0.99013	0.95388	0.95388	0.94652	0.96716
0.60667	2.06000	3.46390	4.68010	0.95367	0.98845	0.95747	0.95747	0.95168	0.96869
0.70000	2.06000	3.57366	4.57034	0.95861	0.98674	0.96010	0.96010	0.95572	0.96956
0.80000	2.06000	3.70457	4.43943	0.96394	0.98442	0.96254	0.96254	0.95985	0.96998
0.90000	2.06000	3.88480	4.25920	0.97034	0.98066	0.96468	0.96468	0.96434	0.96947
0.01103	2.08000	2.11467	6.02933	0.84534	0.99813	0.87412	0.87412	0.85021	0.91389
0.05000	2.08000	2.48350	5.66050	0.88376	0.99675	0.90598	0.90598	0.88718	0.93683
0.10000	2.08000	2.68507	5.45893	0.90163	0.99566	0.92020	0.92020	0.90415	0.94653
0.13537	2.08000	2.78299	5.36101	0.90955	0.99502	0.92632	0.92632	0.91159	0.95055
0.50000	2.08000	3.34333	4.80067	0.94601	0.98950	0.95203	0.95203	0.94468	0.96553
0.60667	2.08000	3.46897	4.67503	0.95232	0.98770	0.95572	0.95572	0.95000	0.96711
0.70000	2.08000	3.58228	4.56172	0.95749	0.98585	0.95844	0.95844	0.95419	0.96798
0.80000	2.08000	3.71946	4.42454	0.96313	0.98330	0.96096	0.96096	0.95851	0.96837
0.90000	2.08000	3.92245	4.22155	0.97034	0.97880	0.96317	0.96317	0.96342	0.96758
0.01103	2.10000	2.09961	6.04439	0.84130	0.99800	0.87027	0.87027	0.84616	0.91059
0.05000	2.10000	2.47285	5.67115	0.88051	0.99654	0.90287	0.90287	0.88389	0.93422
0.10000	2.10000	2.67704	5.46696	0.89881	0.99538	0.91745	0.91745	0.90125	0.94423
0.13537	2.10000	2.77631	5.36769	0.90692	0.99471	0.92374	0.92374	0.90888	0.94839
0.50000	2.10000	3.34647	4.79753	0.94448	0.98883	0.95017	0.95017	0.94286	0.96388

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.60667	2.10000	3.47549	4.66851	0.95104	0.98690	0.95398	0.95398	0.94836	0.96549
0.70000	2.10000	3.59282	4.55118	0.95645	0.98489	0.95678	0.95678	0.95271	0.96638
0.80000	2.10000	3.73757	4.40643	0.96245	0.98206	0.95938	0.95938	0.95722	0.96671
0.90000	2.10000	3.98279	4.16121	0.97106	0.97623	0.96166	0.96166	0.96283	0.96535
0.01103	2.12000	2.08492	6.05908	0.83731	0.99787	0.86644	0.86644	0.84215	0.90729
0.05000	2.12000	2.46268	5.68132	0.87731	0.99632	0.89978	0.89978	0.88064	0.93161
0.10000	2.12000	2.66956	5.47444	0.89603	0.99509	0.91472	0.91472	0.89839	0.94193
0.13537	2.12000	2.77022	5.37378	0.90434	0.99437	0.92117	0.92117	0.90619	0.94622
0.50000	2.12000	3.35078	4.79322	0.94301	0.98812	0.94833	0.94833	0.94108	0.96221
0.60667	2.12000	3.48350	4.66050	0.94983	0.98604	0.95225	0.95225	0.94676	0.96386
0.70000	2.12000	3.60541	4.53859	0.95550	0.98386	0.95513	0.95513	0.95126	0.96474
0.80000	2.12000	3.75946	4.38454	0.96191	0.98069	0.95781	0.95781	0.95601	0.96498
0.01103	2.14000	2.07061	6.07339	0.83337	0.99773	0.86264	0.86264	0.83820	0.90398
0.05000	2.14000	2.45297	5.69103	0.87415	0.99609	0.89670	0.89670	0.87742	0.92898
0.10000	2.14000	2.66261	5.48139	0.89329	0.99479	0.91200	0.91200	0.89556	0.93962
0.13537	2.14000	2.76471	5.37929	0.90181	0.99403	0.91861	0.91861	0.90354	0.94404
0.50000	2.14000	3.35628	4.78772	0.94160	0.98737	0.94650	0.94650	0.93933	0.96052
0.60667	2.14000	3.49309	4.65091	0.94869	0.98512	0.95053	0.95053	0.94519	0.96220
0.70000	2.14000	3.62025	4.52375	0.95465	0.98274	0.95349	0.95349	0.94987	0.96306
0.80000	2.14000	3.78604	4.35796	0.96157	0.97915	0.95625	0.95625	0.95488	0.96319
0.01103	2.16000	2.05666	6.08734	0.82949	0.99759	0.85887	0.85887	0.83429	0.90068
0.05000	2.16000	2.44373	5.70027	0.87105	0.99584	0.89365	0.89365	0.87425	0.92636
0.10000	2.16000	2.65620	5.48780	0.89060	0.99447	0.90930	0.90930	0.89276	0.93730
0.13537	2.16000	2.75979	5.38421	0.89932	0.99366	0.91607	0.91607	0.90092	0.94186
0.50000	2.16000	3.36300	4.78100	0.94026	0.98657	0.94467	0.94467	0.93761	0.95881
0.60667	2.16000	3.50434	4.63966	0.94764	0.98414	0.94881	0.94881	0.94366	0.96051
0.70000	2.16000	3.63759	4.50641	0.95392	0.98152	0.95186	0.95186	0.94853	0.96135
0.80000	2.16000	3.81880	4.32520	0.96147	0.97738	0.95469	0.95469	0.95387	0.96130
0.01103	2.18000	2.04308	6.10092	0.82567	0.99743	0.85514	0.85514	0.83043	0.89739
0.05000	2.18000	2.43494	5.70906	0.86799	0.99559	0.89062	0.89062	0.87111	0.92373
0.10000	2.18000	2.65033	5.49367	0.88796	0.99413	0.90662	0.90662	0.89000	0.93498
0.13537	2.18000	2.75545	5.38855	0.89688	0.99328	0.91355	0.91355	0.89834	0.93966
0.50000	2.18000	3.37100	4.77300	0.93899	0.98572	0.94286	0.94286	0.93594	0.95708
0.60667	2.18000	3.51738	4.62662	0.94668	0.98309	0.94711	0.94711	0.94218	0.95880
0.70000	2.18000	3.65776	4.48624	0.95331	0.98020	0.95024	0.95024	0.94725	0.95959
0.80000	2.18000	3.86063	4.28337	0.96171	0.97528	0.95315	0.95315	0.95301	0.95928

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	2.20000	2.02985	6.11415	0.82191	0.99727	0.85145	0.85145	0.82663	0.89410
0.05000	2.20000	2.42661	5.71739	0.86499	0.99532	0.88762	0.88762	0.86802	0.92110
0.10000	2.20000	2.64499	5.49901	0.88537	0.99378	0.90397	0.90397	0.88728	0.93265
0.13537	2.20000	2.75170	5.39230	0.89449	0.99288	0.91105	0.91105	0.89579	0.93747
0.50000	2.20000	3.38032	4.76368	0.93779	0.98482	0.94107	0.94107	0.93430	0.95534
0.60667	2.20000	3.53234	4.61166	0.94582	0.98197	0.94543	0.94543	0.94076	0.95706
0.70000	2.20000	3.68121	4.46279	0.95286	0.97875	0.94864	0.94864	0.94604	0.95779
0.80000	2.20000	3.91885	4.22515	0.96257	0.97260	0.95162	0.95162	0.95242	0.95700
0.01103	2.40000	1.91677	6.22723	0.78775	0.99527	0.81680	0.81680	0.79168	0.86210
0.05000	2.40000	2.36793	5.77607	0.83809	0.99195	0.85938	0.85938	0.83966	0.89529
0.10000	2.40000	2.62102	5.52298	0.86260	0.98931	0.87894	0.87894	0.86246	0.90967
0.13537	2.40000	2.74668	5.39732	0.87378	0.98774	0.88748	0.88748	0.87265	0.91568
0.50000	2.40000	3.57072	4.57328	0.93160	0.97164	0.92421	0.92421	0.92089	0.93695
0.60667	2.40000	3.90314	4.24086	0.94806	0.96139	0.92962	0.92962	0.93133	0.93672
0.01103	2.60000	1.83722	6.30678	0.76010	0.99236	0.78678	0.78678	0.76247	0.83271
0.05000	2.60000	2.35420	5.78980	0.81739	0.98702	0.83487	0.83487	0.81628	0.87122
0.10000	2.60000	2.65295	5.49105	0.84622	0.98265	0.85726	0.85726	0.84235	0.88800
0.13537	2.60000	2.80541	5.33859	0.85971	0.97998	0.86711	0.86711	0.85416	0.89500
0.01103	2.80000	1.79049	6.35351	0.73874	0.98837	0.76143	0.76143	0.73868	0.80657
0.05000	2.80000	2.38814	5.75586	0.80314	0.98009	0.81427	0.81427	0.79777	0.84956
0.10000	2.80000	2.74968	5.39432	0.83696	0.97298	0.83916	0.83916	0.82701	0.86823
0.13537	2.80000	2.94342	5.20058	0.85342	0.96837	0.85016	0.85016	0.84051	0.87588
0.01103	3.00000	1.77717	6.36683	0.72321	0.98309	0.74036	0.74036	0.71968	0.78378
0.05000	3.00000	2.47647	5.66753	0.79545	0.97057	0.79734	0.79734	0.78373	0.83039
0.10000	3.00000	2.93269	5.21131	0.83585	0.95882	0.82444	0.82444	0.81629	0.85028
0.13537	3.00000	3.20429	4.93971	0.85726	0.95018	0.83646	0.83646	0.83185	0.85795
0.01103	3.20000	1.79911	6.34489	0.71302	0.97630	0.72301	0.72301	0.70478	0.76411
0.05000	3.20000	2.63301	5.51099	0.79469	0.95748	0.78365	0.78365	0.77370	0.81347
0.10000	3.20000	3.26507	4.87893	0.84622	0.93633	0.81271	0.81271	0.81041	0.83327
0.13537	3.20000	3.89619	4.24781	0.88830	0.90782	0.82566	0.82566	0.83189	0.83693
0.01103	3.40000	1.85967	6.28433	0.70780	0.96772	0.70883	0.70883	0.69332	0.74718
0.05000	3.40000	2.88877	5.25523	0.80224	0.93891	0.77272	0.77272	0.76741	0.79820

PROGRAM 8.1 NORMAL RELIABILITY LIKELIHOOD CONTOURS

CONTOUR	SIGMA	MU ONE	MU TWO	LEFT 1	RIGHT 1	LEFT 2	RIGHT 2	LEFT 3	RIGHT 3
0.01103	3.60000	1.96449	6.17951	0.70736	0.95697	0.69729	0.69729	0.68477	0.73259
0.05000	3.60000	3.34810	4.79590	0.82382	0.90860	0.76410	0.76410	0.76547	0.78317
0.01103	3.80000	2.12304	6.02096	0.71181	0.94346	0.68794	0.68794	0.67868	0.71991
0.01103	4.00000	2.35259	5.79141	0.72178	0.92617	0.68041	0.68041	0.67476	0.70871

MAXIMUM VALUE OF LIKELIHOOD FUNCTION 1.13793, -9

PROGRAM 13.1
BINOMIAL TRINORMAL SIMULATION

PROGRAM 13.1

```
title
binomial  trinormal  simulation

chapter o

a→53
b→53
c→10
d→1000
e→1000
f→1000
g→3
u→3
w→3

x=Ørandom(1,o)

a1=o
a2=.1
a3=.2
a4=.3

i=5(1)53
ai=a(i-1)+.05
repeat

i=1(1)53
read(bi)
bi=.01bi
repeat

read(q)
read(nn)

r=1(1)q
s=1(1)3
1)read(ws)
read(gs)
read(us)
repeat
read(bn)

k=1(1)2
in=o

i=1(1)1000
fi=1.o
repeat
i=1(1)1000
s=1(1)3

d=o
e=o

j=1(1)10
cj=Ørandom(x,2)
e=cjcj+e
d=cj+d
repeat

z=dd/10
e=e-z
e=Øsqrt(e/9)
d=d/10
f=d-gs
f=f/e
h=us-d
h=h/e
a=f
l=o
n=o

2)jump3,o≥a
jump4,a>a53
m=1

6)jump5,a(m+1)>a
m=1+m
jump6

5)d=b(m+1)-bm
e=a(m+1)-am
z=a-am

d=dz/e
d=bm+d
jump8,n=o
d=1-d
n=o

8)jump7,l>o
f=d
l=1
a=h
jump2

3)n=1
a=Ømod(a)
jump2

4)d=o
jump8

7)d=d+f

10)jump11,d>1.o
jump12,o>d
di=1-d
fi=fidi
jump33,s≠2.o
ei=di

33)repeat
repeat

31)m=o
i=1(1)999
jump32,f(i+1)≥fi
a=fi
fi=f(i+1)
f(i+1)=a
a=ei
ei=e(i+1)
e(i+1)=a
a=di
di=d(i+1)
d(i+1)=a
m=1

32)repeat
jump31,m≠o
jump42,in=1.o

an=w1w2w3
d=anbn


newline
1065,o,o,5.1
newline 2
space 43
caption
program 13.1  binomial  trinormal  simulation
newline 7
space 29
caption
standard  normal  performance  variables
caption
     mean  zero    variance  one
newline 4
space 18
caption
performance  variable       true  reliability
caption
     lower  limit    upper  limit    sample
newline 3                                size
space 18
caption
specific  impulse (isp)
space-8
print(w1)1,6
space-9
print(g1)1,6
space-5
print(u1)2,6
space-9
print(nn)2,o
newline 2
space 18
caption
thrust (fn)
space-20
print(w2)1,6
space-9
print(g2)1,6
space-5
print(u2)2,6
```

```
space-9
print(nn)2,0
newline 2
space 18
caption
mixture  ratio (rm)
space-12
print(w3)1,6
space-9
print(g3)1,6
space-5
print(u3)2,6
space-9
print(nn)2,0
newline 4
space 18
caption
functional  reliability r(fu)
space-2
print(bn)1,6


space 25
caption
(binomial)
space-11
print(2nn)2,0

newline 4
space 18
caption
product  of  performance  reliabilities
print(an)3,6
space 10
caption
overall  reliability
print(d)3,6
newline 4
space 18
caption
number  of  simulation  trials
space-2
print(100nn)3,0
newline 4
space 18
caption
the results of every tenth trial are printed in table
caption
 one and table two.


newline
1065,0,0,5.1
newline 2
space 43
caption
program 13.1  binomial  trinormal  simulation
newline 3
space 40
caption
table  one  -  ranked  performance  reliabilities
newline 2
space 23
caption
first  line  -  r(fn)    second  line  -  r(rm)
caption
     third  line  -  r(isp)r(fn)r(rm)


43)l=1(10)91
ln=10l
n=ln+90
newline
newline
space 16

m=ln(10)n
print(dm)1,5
repeat

newline
space 16
m=ln(10)n
print(em)1,5
repeat

newline
space 16
m=ln(10)n
print(fm)1,5
repeat

repeat
```

```
jump41,in=1.0
m=1(1)1000
dm=fm
em=0
j=1(1)20
x=0random(x,1)
jump40,x>bn
em=em+.05
40)repeat
fm=dmem
repeat
in=1.0
jump31
41)repeat

repeat

jump20

11)newline
caption
p exceeds one

21)newline
print(f)1,4
print(d)1,4
print(n)1,0
newline

i=1(1)10
print(cj)2,4
repeat

jump20

42)newline
1065,0,0,5.1
newline 2
space 43
caption
program 13.1  binomial  trinormal  simulation
newline 3
space 43
caption
table  two  -  ranked  overall  reliability
newline 2
space 14
caption
first  line  -  r(isp)r(fn)r(rm)      second  line  -  r(fu)
caption
      third  line  -  r(isp)r(fn)r(rm)r(fu)

jump43
12)newline
caption
p is negative
jump21

20)end


close
```

```
50.00   46.16   42.35   38.60   36.75   34.94   33.13   31.37   29.64
27.94   26.28   24.67   23.10   21.57   20.10   18.67   17.29   15.97
14.71   13.50   12.34   11.24   10.21    9.22    8.30    7.44    6.63
 5.87    5.19    4.54    3.95    3.41    2.93    2.49    2.09    1.75
 1.44    1.17    0.94    0.74    0.58    0.437   0.324   0.233
 0.163   0.109   0.069   0.041   0.023   0.011   0.005   0.001
 0.000
```

```
2.0

10

0.9658    -1.823    10.0
0.9658    -1.823    10.0
0.9658    -1.823    10.0

0.955234

0.9754    -1.9664    10.0
0.9754    -1.9664    10.0
0.9754    -1.9664    10.0

0.965859



***Z


*********
```

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.965800	-1.823000	10.000000	10
THRUST (FN)	0.965800	-1.823000	10.000000	10
MIXTURE RATIO (RM)	0.965800	-1.823000	10.000000	10
FUNCTIONAL RELIABILITY R(FU)	0.955234		(BINOMIAL)	20

PRODUCT OF PERFORMANCE RELIABILITIES 0.900869 OVERALL RELIABILITY 0.860541

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.93226	0.85188	0.99842	0.83427	0.93452	0.81670	0.99120	0.89868	0.92428	0.89923
0.87125	0.88743	0.86206	0.89889	0.84750	0.99689	0.91950	0.99721	0.98738	0.96306
0.70532	0.72871	0.74129	0.74810	0.75517	0.76674	0.77443	0.78099	0.78439	0.79046
0.79805	0.98958	0.99437	0.92445	0.89689	0.99976	0.99570	0.95742	0.90534	0.90997
0.99759	0.94135	0.95001	0.93509	0.97624	0.82314	0.89545	0.95523	0.92388	0.99016
0.79578	0.80291	0.80729	0.81315	0.81716	0.82282	0.82670	0.82997	0.83643	0.83928
0.89416	0.96523	0.99229	0.93149	1.00000	0.86924	0.97305	0.94742	0.99407	0.99609
0.97200	1.00000	0.88776	1.00000	0.87982	0.99990	0.99997	0.93643	0.87262	0.98855
0.84230	0.84571	0.84843	0.85294	0.85644	0.85927	0.86262	0.86418	0.86710	0.86886
0.90283	0.93148	0.89783	0.94669	0.89870	0.96674	1.00000	0.89812	0.98186	0.95249
0.96705	1.00000	0.99242	0.97579	0.99752	0.96590	1.00000	1.00000	0.90521	0.93595
0.87232	0.87507	0.87629	0.87890	0.88122	0.88345	0.88559	0.88730	0.88862	0.89094
0.98446	0.91153	0.99530	0.99050	0.99082	0.92891	0.93248	0.94087	0.98370	0.95211
0.98865	0.98283	0.98134	0.98139	0.92843	1.00000	0.97223	0.96751	0.95513	0.99337
0.89371	0.89588	0.89782	0.89986	0.90284	0.90477	0.90659	0.90776	0.90866	0.90991
0.99488	1.00000	0.99207	0.99310	0.98999	0.99110	0.99261	1.00000	0.93718	0.98361
0.99929	0.96919	0.92226	0.92379	0.96028	0.99999	0.99976	0.98603	1.00000	0.99555
0.91137	0.91371	0.91494	0.91674	0.91800	0.91987	0.92114	0.92172	0.92332	0.92487
0.97129	0.97754	0.95038	0.95180	0.98636	0.94391	1.00000	0.95584	0.97998	0.95859
0.95285	0.96083	1.00000	0.97888	0.94659	0.99003	0.93573	0.99990	0.96185	0.98559
0.92550	0.92803	0.92978	0.93069	0.93243	0.93450	0.93573	0.93693	0.93827	0.93988
0.96381	0.95471	0.99745	0.96898	0.95119	0.95607	0.99050	0.98753	0.96367	0.98193
0.97620	1.00000	0.96641	0.99298	0.99843	0.99636	0.98513	0.98725	0.99999	0.97618
0.94087	0.94261	0.94556	0.94781	0.94966	0.95151	0.95419	0.95563	0.95757	0.95847
0.99752	0.99939	0.99027	0.99780	0.99748	0.99348	1.00000	1.00000	0.97890	1.00000
0.98756	0.98979	0.99443	0.98214	0.97091	0.99538	0.97310	0.97524	1.00000	1.00000
0.96009	0.96160	0.96263	0.96639	0.96815	0.97035	0.97309	0.97511	0.97890	0.98030
0.99995	0.99615	0.99000	0.99653	0.99459	0.99625	1.00000	0.99995	1.00000	1.00000
0.98234	1.00000	0.99570	0.99782	1.00000	0.99446	1.00000	0.99973	0.99956	1.00000
0.98175	0.98422	0.98575	0.98789	0.98912	0.99074	0.99219	0.99393	0.99783	0.99972

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.65424	0.74684	0.83221	0.77485	0.70532	0.71725	0.76558	0.73574	0.74366	0.74810
1.00000	0.90000	0.85000	0.90000	1.00000	1.00000	0.95000	1.00000	1.00000	1.00000
0.65424	0.67215	0.69038	0.69736	0.70532	0.71725	0.72730	0.73574	0.74366	0.74810
0.79066	0.79659	0.76370	0.85205	0.90818	0.81764	0.86742	0.78260	0.82940	0.87967
0.95000	0.95000	1.00000	0.90000	0.85000	0.95000	0.90000	1.00000	0.95000	0.90000
0.75112	0.75676	0.76370	0.76684	0.77195	0.77676	0.78068	0.78260	0.78793	0.79170
0.83643	0.84066	0.88850	0.80433	0.89707	0.81267	0.90539	0.86072	0.96672	0.82376
0.95000	0.95000	0.90000	1.00000	0.90000	1.00000	0.90000	0.95000	0.85000	1.00000
0.79461	0.79863	0.79965	0.80433	0.80736	0.81267	0.81485	0.81769	0.82171	0.82376
0.87002	0.92217	0.87629	0.87983	0.88239	0.98796	0.93643	0.93827	0.89094	0.94264
0.95000	0.90000	0.95000	0.95000	0.95000	0.85000	0.90000	0.90000	0.95000	0.90000
0.82652	0.82995	0.83247	0.83584	0.83827	0.83976	0.84279	0.84444	0.84639	0.84838
0.89468	0.94634	0.94815	0.95081	0.85749	0.90577	0.95785	0.90880	0.96081	0.86710
0.95000	0.90000	0.90000	0.90000	1.00000	0.95000	0.90000	0.95000	0.90000	1.00000
0.84994	0.85171	0.85334	0.85573	0.85749	0.86048	0.86206	0.86336	0.86473	0.86710
0.91562	0.96815	0.87344	0.92133	0.87651	0.97568	0.97778	0.88174	0.93042	0.88560
0.95000	0.90000	1.00000	0.95000	1.00000	0.90000	0.90000	1.00000	0.95000	1.00000
0.86984	0.87134	0.87344	0.87527	0.87651	0.87811	0.88000	0.88174	0.88390	0.88560
0.88801	0.88917	0.98978	0.93953	0.94174	0.99883	0.94845	0.95145	0.95509	0.90891
1.00000	1.00000	0.90000	0.95000	0.95000	0.90000	0.95000	0.95000	0.95000	1.00000
0.88801	0.88917	0.89080	0.89255	0.89465	0.89895	0.90103	0.90388	0.90733	0.90891
0.95821	0.96064	0.91411	0.96426	0.91800	0.96887	0.92172	0.97206	0.97374	0.97609
0.95000	0.95000	1.00000	0.95000	1.00000	0.95000	1.00000	0.95000	0.95000	0.95000
0.91030	0.91261	0.91411	0.91604	0.91800	0.92042	0.92172	0.92346	0.92505	0.92729
0.93027	0.98145	0.98410	0.93670	0.98776	0.93988	0.94167	0.99353	0.99783	0.99972
1.00000	0.95000	0.95000	1.00000	0.95000	1.00000	1.00000	0.95000	0.95000	0.95000
0.93027	0.93237	0.93490	0.93670	0.93838	0.93988	0.94167	0.94385	0.94794	0.94973
0.95557	0.95947	0.96198	0.96687	0.97230	0.98071	0.98480	0.98814	0.99178	0.99932
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95557	0.95947	0.96198	0.96687	0.97230	0.98071	0.98480	0.98814	0.99178	0.99932

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.965800	-1.823000	10.000000	10
THRUST (FN)	0.965800	-1.823000	10.000000	10
MIXTURE RATIO (RM)	0.965800	-1.823000	10.000000	10
FUNCTIONAL RELIABILITY R(FU)	0.955234		(BINOMIAL)	20

PRODUCT OF PERFORMANCE RELIABILITIES 0.900869 OVERALL RELIABILITY 0.860541

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.95238	1.00000	0.89360	0.96862	0.85981	0.90809	0.87754	0.91311	0.98338	0.97664
0.87476	0.87558	0.90467	0.83537	0.94521	0.90972	0.92067	0.91453	0.95880	0.92396
0.71857	0.74601	0.76182	0.77230	0.78092	0.78533	0.79118	0.79696	0.80459	0.81011
0.99999	0.96493	0.99850	0.97620	1.00000	0.99982	0.96934	0.94313	0.87498	0.91396
0.83828	0.97909	0.95355	0.95487	0.91140	0.95292	0.99448	0.95929	1.00000	0.92744
0.81878	0.82185	0.82622	0.82865	0.83301	0.83690	0.83899	0.84124	0.84482	0.84735
0.97455	1.00000	0.89483	0.95164	0.92641	0.91643	0.96115	0.99084	0.99841	0.88909
0.91425	0.85166	0.99384	0.97611	0.96923	0.95771	0.92872	0.98830	0.99590	1.00000
0.84906	0.85166	0.85639	0.85900	0.86161	0.86311	0.86406	0.86747	0.86946	0.87082
1.00000	0.95489	0.91820	0.99993	0.99723	0.96721	0.93447	0.99771	0.97979	0.92874
0.96881	0.96932	0.99619	0.95797	0.92203	0.91232	0.99551	0.99480	0.99988	1.00000
0.87288	0.87441	0.87643	0.87847	0.88058	0.88240	0.88408	0.88613	0.88709	0.88867
0.99498	0.94309	0.89551	0.98032	0.95510	0.97750	0.98776	0.98513	1.00000	0.95563
0.89684	1.00000	0.99855	0.92259	0.94155	0.94455	0.91117	0.91535	0.93654	1.00000
0.89067	0.89215	0.89421	0.89578	0.89661	0.89772	0.90001	0.90146	0.90410	0.90586
0.94904	0.96423	0.96907	1.00000	0.98478	0.96760	1.00000	0.99035	1.00000	0.95501
0.97121	1.00000	0.94162	0.92953	0.93134	0.98466	0.97774	0.93021	0.95904	1.00000
0.90883	0.91091	0.91235	0.91524	0.91717	0.91832	0.91983	0.92123	0.92220	0.92378
0.99917	0.97529	0.95697	1.00000	0.95073	0.99215	0.95316	1.00000	0.93819	0.99549
0.93660	0.99597	0.99962	0.94470	0.99659	0.98547	0.99798	0.96762	1.00000	0.96606
0.92549	0.92709	0.92881	0.92998	0.93175	0.93332	0.93489	0.93666	0.93809	0.94033
0.95276	0.99927	0.99695	0.95098	1.00000	0.99373	1.00000	0.99918	0.96735	0.96017
0.98817	0.94415	0.95420	0.99879	0.99190	0.95602	0.95884	0.99669	0.99869	0.99586
0.94149	0.94346	0.94496	0.94655	0.94767	0.94967	0.95070	0.95243	0.95357	0.95504
0.99354	0.99999	0.98163	0.99454	1.00000	0.99811	0.99217	0.98999	0.97861	1.00000
0.96269	0.99354	1.00000	0.96854	0.96638	0.98159	0.97797	0.99991	0.99668	0.97573
0.95647	0.95901	0.96059	0.96326	0.96527	0.96783	0.97031	0.97213	0.97406	0.97573
0.98100	1.00000	0.99690	0.99283	0.99859	0.99159	0.99144	1.00000	1.00000	1.00000
0.99996	0.98089	0.99209	1.00000	0.98904	1.00000	0.99973	0.99767	0.99988	0.99995
0.97746	0.98089	0.98236	0.98460	0.98761	0.99011	0.99116	0.99461	0.99765	0.99995

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.77111	0.73365	0.78092	0.83695	0.76094	0.85900	0.82653	0.88091	0.94045	0.79782
0.85000	0.95000	0.90000	0.85000	0.95000	0.85000	0.90000	0.85000	0.80000	0.95000
0.65545	0.69697	0.70283	0.71141	0.72289	0.73015	0.74387	0.74878	0.75236	0.75792
0.95535	0.90720	0.81639	0.86726	0.78383	0.87512	0.87986	0.93589	0.83995	0.84167
0.80000	0.85000	0.95000	0.90000	1.00000	0.90000	0.90000	0.85000	0.95000	0.95000
0.76428	0.77112	0.77557	0.78054	0.78383	0.78760	0.79188	0.79550	0.79795	0.79959
0.89203	0.84761	0.85093	0.95357	0.85870	0.86163	0.86392	0.86651	0.91722	0.87082
0.90000	0.95000	0.95000	0.85000	0.95000	0.95000	0.95000	0.95000	0.90000	0.95000
0.80283	0.80523	0.80838	0.81054	0.81577	0.81855	0.82073	0.82318	0.82549	0.82728
0.87288	0.87453	0.83402	0.83612	0.83742	0.83904	0.93337	0.93553	0.93823	0.89169
0.95000	0.95000	1.00000	1.00000	1.00000	1.00000	0.90000	0.90000	0.90000	0.95000
0.82924	0.83080	0.83402	0.83612	0.83742	0.83904	0.84003	0.84198	0.84440	0.84710
0.84788	0 84952	0.85166	0.89781	0.85523	0.90260	0.90527	0.86304	0.95998	0.86616
1.00000	1.00000	1.00000	0.95000	1.00000	0.95000	0.95000	1.00000	0.90000	1.00000
0.84788	0.84952	0.85166	0.85292	0.85523	0.85747	0.86000	0.86304	0.86398	0.86616
0.86852	0.87027	0.87212	0.92037	0.92205	0.87755	0.87931	0.92806	0.92935	0.88431
1.00000	1.00000	1.00000	0.95000	0.95000	1.00000	1.00000	0.95000	0.95000	1.00000
0.86852	0.87027	0.87212	0.87436	0.87594	0.87755	0.87931	0.88166	0.88288	0.88431
0.93346	0.88826	0.98899	0.89355	0.89560	0.94357	0.94503	0.94709	0.90126	0.95100
0.95000	1.00000	0.90000	1.00000	1.00000	0.95000	0.95000	0.95000	1.00000	0.95000
0.88679	0.88826	0.89009	0.89355	0.89560	0.89639	0.89777	0.89974	0.90126	0.90345
0.95334	0.90858	0.95876	0.96080	0.96378	0.91725	0.91987	0.92149	0.92318	0.92482
0.95000	1.00000	0.95000	0.95000	0.95000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90567	0.90858	0.91083	0.91276	0.91559	0.91725	0.91987	0.92149	0.92318	0.92482
0.97525	0 92835	0.93134	0.93295	0.93549	0.93810	0.94079	0.99210	0.94496	0.99766
0.95000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.95000	1.00000	0.95000
0.92649	0.92835	0.93134	0.93295	0.93549	0.93810	0.94079	0.94250	0.94496	0.94778
0.94916	0.95305	0.95545	0.95997	0.96727	0.97394	0.97790	0.98473	0.99067	0.99922
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.94916	0.95305	0.95545	0.95997	0.96727	0.97394	0.97790	0.98473	0.99067	0.99922

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.975400	-1.966400	10.000000	10
THRUST (FN)	0.975400	-1.966400	10.000000	10
MIXTURE RATIO (RM)	0.975400	-1.966400	10.000000	10
FUNCTIONAL RELIABILITY R(FU)	0.965859		(BINOMIAL)	20

PRODUCT OF PERFORMANCE RELIABILITIES 0.928001 OVERALL RELIABILITY 0.896318

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.94278	0.99743	0.99916	0.97167	0.99997	0.93589	0.90338	1.00000	0.96166	0.99999
0.97511	0.99576	0.93879	0.93582	0.92096	0.93790	0.92905	0.99893	0.91566	0.85440
0.77603	0.78980	0.80645	0.81987	0.82807	0.83314	0.83868	0.84404	0.85044	0.85436
0.97804	0.93008	0.96361	0.93248	0.94289	0.92390	0.96100	0.97362	0.97032	0.99811
0.87654	0.93208	0.96383	0.93908	1.00000	1.00000	0.92652	0.90284	0.96530	0.94603
0.85686	0.86104	0.86416	0.86827	0.87158	0.87423	0.87586	0.87903	0.88224	0.88441
0.94671	0.95928	0.99004	0.91689	0.89722	0.98821	0.97694	0.98757	0.97913	0.91442
0.93823	0.93230	0.97263	1.00000	1.00000	0.99772	0.97414	0.98856	0.93874	0.99025
0.88657	0.88885	0.89048	0.89235	0.89421	0.89585	0.89748	0.90194	0.90317	0.90547
0.99953	0.96477	0.95560	0.94530	0.92621	0.98822	0.92595	1.00000	1.00000	0.99930
0.96264	0.94497	0.99290	1.00000	0.98858	0.97632	0.99166	0.96218	0.94497	0.92254
0.90777	0.91168	0.91235	0.91379	0.91457	0.91579	0.91734	0.91949	0.92074	0.92189
0.99608	0.94556	0.96670	0.97750	0.98767	0.95899	0.99851	0.98828	0.99901	0.99273
0.94979	0.98384	1.00000	0.99857	0.95869	0.97491	0.94250	0.95839	1.00000	0.97281
0.92391	0.92636	0.92849	0.93083	0.93268	0.93370	0.93510	0.93648	0.93804	0.93889
0.98963	0.99972	0.94384	0.99180	0.99178	1.00000	0.99275	0.95218	0.99802	1.00000
0.96900	0.99877	1.00000	0.99906	0.97843	0.95441	0.98573	1.00000	0.95957	0.95700
0.94041	0.94152	0.94373	0.94499	0.94743	0.94911	0.95116	0.95218	0.95362	0.95511
0.98106	1.00000	0.97626	0.98334	0.99948	0.98941	0.99689	0.97521	0.99729	0.98803
0.99990	0.95772	0.99934	1.00000	0.96265	0.99994	0.96903	0.99923	0.98538	0.99547
0.95617	0.95703	0.95779	0.95923	0.96028	0.96226	0.96303	0.96407	0.96467	0.96572
0.99078	0.99981	1.00000	0.97837	1.00000	0.99678	0.99970	0.99847	0.97950	1.00000
0.97586	0.98714	0.97104	0.99969	0.98885	0.99193	0.98675	0.99999	0.99920	0.98828
0.96686	0.96769	0.96879	0.96978	0.97105	0.97209	0.97342	0.97433	0.97586	0.97744
0.99997	0.99825	0.99632	0.99171	0.99223	0.99969	1.00000	0.99943	0.99321	0.99195
0.97832	0.99949	0.98920	0.99955	0.99021	0.99714	1.00000	0.98638	0.99346	0.99964
0.97810	0.97916	0.98051	0.98177	0.98234	0.98335	0.98418	0.98582	0.98672	0.98808
0.99471	0.99811	0.99797	1.00000	0.99674	0.99602	1.00000	0.99812	0.99955	1.00000
0.99605	0.99274	1.00000	1.00000	0.99972	1.00000	0.99694	1.00000	1.00000	1.00000
0.98954	0.99075	0.99182	0.99300	0.99486	0.99602	0.99694	0.99812	0.99955	1.00000

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.79951	0.82807	0.84417	0.85713	0.86520	0.92120	0.87434	0.83666	0.93827	0.80328
0.90000	0.90000	0.90000	0.90000	0.90000	0.85000	0.90000	0.95000	0.85000	1.00000
0.71956	0.74526	0.75976	0.77141	0.77868	0.78302	0.78691	0.79483	0.79753	0.80328
0.90268	0.86171	0.86697	0.91734	0.92141	0.83199	0.98404	0.88399	0.88657	0.88992
0.90000	0.95000	0.95000	0.90000	0.90000	1.00000	0.85000	0.95000	0.95000	0.95000
0.81241	0.81863	0.82362	0.82561	0.82927	0.83199	0.83643	0.83979	0.84224	0.84542
0.84700	0.89421	0.89732	0.85515	0.85724	0.90408	0.90668	0.96031	0.86640	0.91417
1.00000	0.95000	0.95000	1.00000	1.00000	0.95000	0.95000	0.90000	1.00000	0.95000
0.84700	0.84950	0.85245	0.85515	0.85724	0.85888	0.86134	0.86428	0.86640	0.86846
0.91676	0.87298	0.92029	0.87581	0.97491	0.87902	0.88152	0.98177	0.93210	0.88661
0.95000	1.00000	0.95000	1.00000	0.90000	1.00000	1.00000	0.90000	0.95000	1.00000
0.87092	0.87298	0.87428	0.87581	0.87742	0.87902	0.88152	0.88359	0.88549	0.88661
0.93510	0.93648	0.93841	0.89284	0.94151	0.99602	0.89707	0.99955	0.94919	0.95192
0.95000	0.95000	0.95000	1.00000	0.95000	0.90000	1.00000	0.90000	0.95000	0.95000
0.88835	0.88965	0.89149	0.89284	0.89443	0.89642	0.89707	0.89959	0.90173	0.90433
0.95334	0.95542	0.95703	0.95865	0.96026	0.91379	0.96288	0.96380	0.91659	0.96748
0.95000	0.95000	0.95000	0.95000	0.95000	1.00000	0.95000	0.95000	1.00000	0.95000
0.90568	0.90765	0.90918	0.91072	0.91224	0.91379	0.91474	0.91561	0.91659	0.91911
0.92008	0.92152	0.97209	0.97433	0.97705	0.92930	0.93137	0.98212	0.93370	0.93515
1.00000	1.00000	0.95000	0.95000	0.95000	1.00000	1.00000	0.95000	1.00000	1.00000
0.92008	0.92152	0.92348	0.92561	0.92820	0.92930	0.93137	0.93301	0.93370	0.93515
0.93654	0.98771	0.93909	0.94105	0.94223	0.99407	0.94569	0.94743	0.99970	0.95152
1.00000	0.95000	1.00000	1.00000	1.00000	0.95000	1.00000	1.00000	0.95000	1.00000
0.93654	0.93832	0.93909	0.94105	0.94223	0.94437	0.94569	0.94743	0.94972	0.95152
0.95432	0.95675	0.95840	0.96094	0.96467	0.96619	0.96837	0.97005	0.97259	0.97508
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95432	0.95675	0.95840	0.96094	0.96467	0.96619	0.96837	0.97005	0.97259	0.97508
0.97763	0.97899	0.98274	0.98418	0.98657	0.98954	0.99237	0.99567	0.99770	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97763	0.97899	0.98274	0.98418	0.98657	0.98954	0.99237	0.99567	0.99770	1.00000

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.975400	-1.966400	10.000000	10
THRUST (FN)	0.975400	-1.966400	10.000000	10
MIXTURE RATIO (RH)	0.975400	-1.966400	10.000000	10
FUNCTIONAL RELIABILITY R(FU)	0.965859		(BINOMIAL)	20

PRODUCT OF PERFORMANCE RELIABILITIES 0.928001 OVERALL RELIABILITY 0.896318

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.99799	0.96928	0.99291	0.94236	0.94795	0.99891	0.93181	0.85937	0.92080	0.99651
0.89572	0.99161	0.89186	0.87407	0.96868	0.84838	0.99992	0.99589	0.98081	1.00000
0.76805	0.79737	0.81135	0.81907	0.82844	0.83459	0.84049	0.84458	0.85261	0.85581
0.98226	0.94231	1.00000	0.96289	0.99811	0.96676	0.96468	0.98349	0.94370	1.00000
0.97026	0.92462	0.91041	0.98789	0.93803	1.00000	0.93103	0.91613	0.98350	0.99983
0.86163	0.86496	0.86914	0.87276	0.87629	0.87965	0.88232	0.88521	0.88747	0.88869
0.99853	0.95105	0.96182	0.93011	0.97268	1.00000	0.92358	0.93033	1.00000	0.91468
0.98320	0.99844	0.99855	0.99518	0.99694	0.97786	0.99916	0.97914	0.91805	0.99990
0.89073	0.89439	0.89687	0.89901	0.90117	0.90478	0.90828	0.91092	0.91262	0.91458
0.94636	1.00000	0.99188	0.94963	1.00000	1.00000	0.93766	0.99943	0.99995	0.99515
0.97061	0.92811	0.93982	0.96854	0.94099	1.00000	1.00000	1.00000	1.00000	0.99925
0.91591	0.91759	0.91849	0.91976	0.92058	0.92237	0.92411	0.92662	0.92781	0.92900
0.93781	0.95987	0.97705	0.94228	0.97528	0.95861	1.00000	1.00000	0.94575	0.98575
0.99706	0.97123	0.99782	0.99720	0.95966	0.98589	0.93884	1.00000	0.99733	0.95598
0.93006	0.93219	0.93307	0.93473	0.93582	0.93814	0.93880	0.93992	0.94130	0.94229
1.00000	0.99279	0.95553	0.95051	0.97621	0.99053	1.00000	0.99269	0.96047	0.99601
0.99974	0.98792	1.00000	0.99990	0.99187	0.95911	0.95775	0.99139	0.99452	0.97202
0.94354	0.94495	0.94642	0.94774	0.94877	0.95002	0.95177	0.95311	0.95508	0.95614
0.96190	0.99768	0.99050	0.98895	0.99658	0.99975	1.00000	1.00000	1.00000	0.99112
1.00000	1.00000	1.00000	0.97734	1.00000	0.99144	0.97950	0.96607	0.97929	0.97962
0.95713	0.95834	0.95928	0.96081	0.96271	0.96406	0.96490	0.96607	0.96677	0.96867
0.97066	0.97401	0.98389	0.99949	0.98736	0.98326	0.99064	0.99081	0.98543	0.99895
1.00000	0.99853	0.98954	0.98238	1.00000	0.99998	0.98712	0.99901	0.99534	0.98627
0.97049	0.97174	0.97339	0.97442	0.97526	0.97651	0.97788	0.97882	0.97934	0.98009
0.99475	0.98760	0.98288	0.99957	1.00000	0.99548	0.99985	0.99998	0.99153	0.99936
1.00000	0.99591	1.00000	0.98443	0.99921	0.99996	0.99635	0.98868	0.99920	0.99164
0.98101	0.98178	0.98281	0.98368	0.98488	0.98637	0.98746	0.98866	0.98971	0.99100
0.99916	1.00000	0.99469	0.99928	0.99900	1.00000	0.99753	0.99962	0.99992	1.00000
0.99935	0.99982	0.99999	1.00000	0.99694	0.99783	1.00000	0.99950	1.00000	1.00000
0.99211	0.99327	0.99421	0.99510	0.99594	0.99670	0.99753	0.99913	0.99977	1.00000

PROGRAM 13.1 BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

FIRST LINE - R(ISP)	R(FN)	R(RM)	SECOND LINE - R(FU)			THIRD LINE - R(ISP)	R(FN)	R(RM)	R(FU)
0.80334	0.78259	0.80184	0.91453	0.87233	0.83243	0.79393	0.88866	0.80377	0.80903
0.90000	0.95000	0.95000	0.85000	0.90000	0.95000	1.00000	0.90000	1.00000	1.00000
0.72301	0.74346	0.76175	0.77735	0.78510	0.79081	0.79393	0.79979	0.80377	0.80903
0.90274	0.85896	0.86521	0.82579	0.87243	0.87540	0.83467	0.88389	0.88608	0.93977
0.90000	0.95000	0.95000	1.00000	0.95000	0.95000	1.00000	0.95000	0.95000	0.90000
0.81247	0.81601	0.82195	0.82579	0.82880	0.83163	0.83467	0.83969	0.84178	0.84579
0.94217	0.85261	0.90037	0.85787	0.90828	0.91232	0.96607	0.87155	0.91911	0.92211
0.90000	1.00000	0.95000	1.00000	0.95000	0.95000	0.90000	1.00000	0.95000	0.95000
0.84795	0.85261	0.85535	0.85787	0.86287	0.86671	0.86946	0.87155	0.87315	0.87601
0.92401	0.97817	0.92824	0.88281	0.88511	0.93305	0.88805	0.98746	0.89100	0.93960
0.95000	0.90000	0.95000	1.00000	1.00000	0.95000	1.00000	0.90000	1.00000	0.95000
0.87781	0.88035	0.88182	0.88281	0.88511	0.88640	0.88805	0.88871	0.89100	0.89262
0.99331	0.89574	0.89754	0.94632	0.99961	0.94815	0.90308	0.90533	0.95614	0.91052
0.90000	1.00000	1.00000	0.95000	0.90000	0.95000	1.00000	1.00000	0.95000	1.00000
0.89398	0.89574	0.89754	0.89901	0.89965	0.90074	0.90308	0.90533	0.90834	0.91052
0.95948	0.96081	0.91479	0.96446	0.96599	0.91976	0.97049	0.92418	0.97486	0.97622
0.95000	0.95000	1.00000	0.95000	0.95000	1.00000	0.95000	1.00000	0.95000	0.95000
0.91150	0.91277	0.91479	0.91624	0.91769	0.91976	0.92197	0.92418	0.92612	0.92740
0.97788	0.97887	0.98062	0.93307	0.98376	0.98524	0.93808	0.93914	0.94095	0.94195
0.95000	0.95000	0.95000	1.00000	0.95000	0.95000	1.00000	1.00000	1.00000	1.00000
0.92898	0.92993	0.93159	0.93307	0.93459	0.93597	0.93808	0.93914	0.94095	0.94195
0.94285	0.99417	0.94542	0.94642	0.99748	0.99921	0.95060	0.95377	0.95679	0.95842
1.00000	0.95000	1.00000	1.00000	0.95000	0.95000	1.00000	1.00000	1.00000	1.00000
0.94285	0.94446	0.94542	0.94642	0.94760	0.94925	0.95060	0.95377	0.95679	0.95842
0.96152	0.96387	0.96578	0.96696	0.96940	0.97159	0.97407	0.97484	0.97709	0.97926
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96152	0.96387	0.96578	0.96696	0.96940	0.97159	0.97407	0.97484	0.97709	0.97926
0.98097	0.98255	0.98386	0.98668	0.98897	0.99169	0.99407	0.99597	0.99824	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98097	0.98255	0.98386	0.98668	0.98897	0.99169	0.99407	0.99597	0.99824	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.656100

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.71469	0.75298	0.72041	0.88796	0.95648	0.87143	0.67543	0.70907	0.93476	0.88770
0.87694	0.83769	0.87193	0.86606	0.99233	0.84419	0.85198	0.93682	0.68595	0.86571
0.46920	0.49294	0.50773	0.52062	0.53638	0.54582	0.55159	0.56236	0.57291	0.57871
0.85528	0.76959	0.81177	0.88713	0.86760	0.91910	0.90339	0.77028	0.99562	0.88138
0.92052	0.82749	0.73901	0.94487	0.90764	0.90445	0.79934	0.98499	0.93735	0.99990
0.58339	0.58880	0.59531	0.60048	0.60516	0.61137	0.61573	0.61976	0.62567	0.62808
0.82734	0.84964	0.80538	0.80697	0.81666	0.95906	0.71473	0.77483	0.87172	0.99991
0.86860	0.92081	0.95734	1.00000	0.79799	0.80242	0.99082	0.92330	0.89691	0.94552
0.63236	0.63613	0.63805	0.64283	0.64846	0.65422	0.65651	0.65874	0.66283	0.66781
0.92404	0.98555	0.91354	0.82392	0.91041	0.85240	0.85696	0.87715	0.83841	0.85877
0.75637	0.88422	0.86514	0.83056	0.78663	0.93768	0.92077	0.98077	0.95028	0.93201
0.67387	0.67793	0.68017	0.68432	0.68762	0.69260	0.69527	0.69841	0.70167	0.70448
0.92502	0.91863	0.94574	0.82367	0.96031	0.93450	0.95808	0.94719	0.81192	0.93583
0.77519	0.85968	0.94157	0.87258	0.81238	0.94280	0.88795	0.78575	0.98416	0.79292
0.70736	0.70984	0.71228	0.71495	0.71699	0.71933	0.72068	0.72309	0.72555	0.72948
0.83199	0.99112	0.79799	0.95812	0.88760	0.97613	0.79296	0.84596	0.96790	0.81507
0.95396	0.80035	0.93021	0.83706	0.94153	0.88355	0.99539	0.92994	0.83281	0.92971
0.73153	0.73438	0.73603	0.73955	0.74262	0.74456	0.74684	0.74960	0.75232	0.75576
0.90423	0.94625	0.82503	0.93559	0.89193	0.95908	0.93674	0.98191	0.84818	0.94298
0.97282	0.93400	0.93387	0.99983	0.86799	0.97414	0.90877	0.86870	0.99674	0.90769
0.75824	0.76062	0.76370	0.76916	0.77161	0.77489	0.77781	0.77982	0.78364	0.78561
0.93447	0.89190	0.94446	0.91069	0.88617	0.95549	0.91498	0.95446	0.94111	0.93917
0.89803	0.91965	0.91007	0.98347	0.99976	0.96558	0.99977	0.89574	0.97962	0.89247
0.78884	0.79115	0.79484	0.79773	0.80324	0.80635	0.81030	0.81204	0.81542	0.81831
1.00000	0.96694	0.89297	0.90791	0.87684	0.99159	0.91375	0.87112	0.99955	0.91353
0.90627	0.91995	0.95577	0.98022	0.96826	0.97127	0.99916	0.99483	0.99768	0.98890
0.82239	0.82762	0.82997	0.83370	0.83628	0.84015	0.84620	0.84979	0.85467	0.86168
0.89007	0.90479	0.97270	0.99273	0.98453	0.98666	1.00000	0.99060	0.97179	0.99999
0.97607	0.98101	0.92873	0.89884	0.99690	0.92463	0.93708	0.99686	0.97870	0.98540
0.86660	0.87242	0.87852	0.88916	0.89839	0.90773	0.91645	0.92661	0.94248	0.97553

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01423 AVERAGE = 0.65173 EQUIVALENT BINOMIAL VARIANCE = 0.02256 EFFICIENCY = 0.63055

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.47620	0.58453	0.52781	0.54522	0.74728	0.65670	0.52035	0.68646	0.54199	0.49294
0.80000	0.70000	0.80000	0.80000	0.60000	0.70000	0.90000	0.70000	0.90000	1.00000
0.38096	0.40917	0.42225	0.43618	0.44837	0.45969	0.46831	0.48052	0.48779	0.49294
0.49927	0.63355	0.57252	0.52062	0.65725	0.58934	0.53661	0.60034	0.67985	0.61137
1.00000	0.80000	0.90000	1.00000	0.80000	0.90000	1.00000	0.90000	0.80000	0.90000
0.49927	0.50684	0.51527	0.52062	0.52580	0.53040	0.53661	0.54031	0.54388	0.55024
0.61630	0.69622	0.80324	0.62808	0.71182	0.71418	0.63775	0.72040	0.72569	0.58398
0.90000	0.80000	0.70000	0.90000	0.80000	0.80000	0.90000	0.80000	0.80000	1.00000
0.55467	0.55698	0.56227	0.56527	0.56946	0.57134	0.57398	0.57632	0.58055	0.58398
0.73576	0.65710	0.59531	0.75232	0.75646	0.60874	0.68208	0.68559	0.61939	0.62272
0.80000	0.90000	1.00000	0.80000	0.80000	1.00000	0.90000	0.90000	1.00000	1.00000
0.58861	0.59139	0.59531	0.60185	0.60517	0.60874	0.61387	0.61703	0.61939	0.62272
0.78304	0.78551	0.63270	0.79484	0.63798	0.71143	0.64297	0.92228	0.72124	0.65235
0.80000	0.80000	1.00000	0.80000	1.00000	0.90000	1.00000	0.70000	0.90000	1.00000
0.62643	0.62841	0.63270	0.63587	0.63798	0.64029	0.64297	0.64560	0.64911	0.65235
0.81876	0.65823	0.73337	0.82896	0.74177	0.74570	0.84277	0.75154	0.67989	0.68324
0.80000	1.00000	0.90000	0.80000	0.90000	0.90000	0.80000	0.90000	1.00000	1.00000
0.65501	0.65823	0.66003	0.66317	0.66759	0.67113	0.67421	0.67639	0.67989	0.68324
0.76370	0.69001	0.77407	0.77789	0.77982	0.70465	0.88544	0.79097	0.71657	0.79821
0.90000	1.00000	0.90000	0.90000	0.90000	1.00000	0.80000	0.90000	1.00000	0.90000
0.68733	0.69001	0.69666	0.70010	0.70184	0.70465	0.70835	0.71187	0.71657	0.71839
0.72183	0.72509	0.72700	0.91402	0.73451	0.81975	0.74122	0.82925	0.83292	0.75198
1.00000	1.00000	1.00000	0.80000	1.00000	0.90000	1.00000	0.90000	0.90000	1.00000
0.72183	0.72509	0.72700	0.73122	0.73451	0.73778	0.74122	0.74632	0.74962	0.75198
0.84155	0.76136	0.85444	0.77204	0.77910	0.87242	0.78834	0.88574	0.80299	0.80871
0.90000	1.00000	0.90000	1.00000	1.00000	0.90000	1.00000	0.90000	1.00000	1.00000
0.75740	0.76136	0.76900	0.77204	0.77910	0.78518	0.78834	0.79717	0.80299	0.80871
0.90500	0.91399	0.83045	0.83925	0.84838	0.85690	0.86859	0.88692	0.91255	0.95325
0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.81450	0.82259	0.83045	0.83925	0.84838	0.85690	0.86859	0.88692	0.91255	0.95325

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.656100

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.76513	0.77211	0.70903	0.80806	0.79063	0.72119	0.94813	0.90564	0.81273	0.90571
0.85886	0.75305	0.75813	0.82623	0.83343	0.86970	0.76841	0.93700	0.88749	0.79348
0.48451	0.50290	0.52502	0.53748	0.55105	0.55809	0.57065	0.57966	0.58387	0.59103
0.82640	0.88687	0.77952	0.74027	0.75592	0.70786	0.86613	0.80643	0.75818	0.78344
0.87548	0.85995	0.91753	0.82440	0.85140	0.93049	0.84544	0.85055	0.86873	0.85154
0.59514	0.60000	0.60568	0.60905	0.61289	0.61593	0.62074	0.62389	0.62827	0.63229
0.99979	0.87267	0.73973	0.81343	0.84066	0.94807	0.76228	0.88867	0.87522	0.88920
0.76756	0.77706	0.88880	0.92528	0.95878	0.91080	0.92021	0.88069	0.77399	0.92588
0.63500	0.63940	0.64527	0.64787	0.65066	0.65481	0.65776	0.65938	0.66280	0.66635
0.81628	0.90109	0.94370	0.88772	0.83172	0.83199	0.91227	0.91186	0.94893	0.82698
0.90729	0.85790	0.71822	0.85145	0.86649	0.91879	0.81740	0.84478	0.78740	0.91272
0.66948	0.67283	0.67647	0.68099	0.68274	0.68780	0.69055	0.69236	0.69650	0.69811
0.85104	0.96974	0.98916	0.90092	0.81824	0.99820	0.80616	0.98517	0.89509	0.90910
0.92984	0.85405	0.94161	0.98382	0.98099	0.75389	0.97579	0.79751	0.82691	0.89248
0.69985	0.70473	0.70797	0.70964	0.71270	0.71529	0.71825	0.72208	0.72524	0.72877
0.89714	0.96536	0.98537	0.91839	0.91951	0.77335	0.92324	0.99747	0.99932	0.91454
0.81738	0.85608	0.81778	0.88783	0.83668	0.99998	0.88012	0.77631	0.86781	0.95687
0.73181	0.73340	0.73680	0.73961	0.74397	0.74697	0.74930	0.75313	0.75555	0.75938
0.84281	0.89601	0.91976	0.94315	0.89700	0.83616	0.97712	0.83269	0.91924	0.89264
0.97838	0.91771	0.91690	0.88335	0.93895	0.94295	0.96649	1.00000	0.99125	0.98897
0.76187	0.76395	0.76643	0.76999	0.77257	0.77589	0.77842	0.78291	0.78511	0.78953
0.83912	0.87655	0.86306	0.95906	0.96792	0.92062	0.94160	0.93262	0.98194	0.90160
0.99684	0.99596	0.95615	0.91438	0.90113	0.93142	0.99979	0.98720	0.95985	0.95118
0.79310	0.79667	0.79949	0.80157	0.80455	0.80797	0.81197	0.81446	0.81939	0.82411
0.99875	0.98939	0.88070	0.91869	0.94832	0.93490	0.94288	0.99159	0.97864	0.99256
0.94245	0.90743	0.97622	0.98328	0.94915	0.99398	0.98203	0.97066	0.94461	1.00000
0.82880	0.83164	0.83465	0.83710	0.84201	0.84744	0.85222	0.86072	0.86428	0.86741
0.97356	0.97256	0.94040	0.99655	0.98918	0.99405	0.94963	0.95937	0.99971	0.99918
0.98300	0.96378	0.94878	1.00000	0.99677	0.98610	0.97746	0.98444	0.99996	0.99148
0.87446	0.88374	0.89223	0.90208	0.90711	0.91275	0.91845	0.93748	0.95419	0.99041

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01393 AVERAGE = 0.65762 EQUIVALENT BINOMIAL VARIANCE = 0.02256 EFFICIENCY = 0.61718

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.66032	0.41795	0.48487	0.50772	0.58946	0.48086	0.69654	0.54776	0.62129	0.71866
0.60000	1.00000	0.90000	0.90000	0.80000	1.00000	0.70000	0.90000	0.80000	0.70000
0.39619	0.41795	0.43638	0.45695	0.47157	0.48086	0.48758	0.49298	0.49703	0.50306
0.63720	0.57458	0.65600	0.75638	0.66714	0.53748	0.77641	0.60808	0.60967	0.61438
0.80000	0.90000	0.80000	0.70000	0.80000	1.00000	0.70000	0.90000	0.90000	0.90000
0.50976	0.51712	0.52480	0.52947	0.53371	0.53748	0.54349	0.54727	0.54870	0.55294
0.61965	0.69915	0.62627	0.70964	0.71529	0.64213	0.64634	0.65035	0.65571	0.74184
0.90000	0.80000	0.90000	0.80000	0.80000	0.90000	0.90000	0.90000	0.90000	0.80000
0.55769	0.55932	0.56365	0.56772	0.57223	0.57792	0.58170	0.58531	0.59014	0.59347
0.66319	0.66701	0.67006	0.60568	0.76187	0.68085	0.76827	0.77244	0.77575	0.69401
0.90000	0.90000	0.90000	1.00000	0.80000	0.90000	0.80000	0.80000	0.80000	0.90000
0.59687	0.60031	0.60305	0.60568	0.60949	0.61277	0.61461	0.61795	0.62060	0.62461
0.62877	0.90323	0.63520	0.79752	0.80143	0.71615	0.64697	0.65028	0.81726	0.73031
1.00000	0.70000	1.00000	0.80000	0.80000	0.90000	1.00000	1.00000	0.80000	0.90000
0.62877	0.63226	0.63520	0.63802	0.64114	0.64453	0.64697	0.65028	0.65381	0.65728
0.82398	0.73423	0.73691	0.66706	0.67055	0.67383	0.75178	0.68108	0.75908	0.76348
0.80000	0.90000	0.90000	1.00000	1.00000	1.00000	0.90000	1.00000	0.90000	0.90000
0.65919	0.66081	0.66322	0.66706	0.67055	0.67383	0.67660	0.68108	0.68317	0.68713
0.68885	0.69170	0.86725	0.69811	0.78039	0.78420	0.70946	0.79041	0.79279	0.80005
1.00000	1.00000	0.80000	1.00000	0.90000	0.90000	1.00000	0.90000	0.90000	0.90000
0.68885	0.69170	0.69380	0.69811	0.70235	0.70578	0.70946	0.71137	0.71351	0.72005
0.72359	0.72758	0.81147	0.91722	0.73799	0.74397	0.74700	0.74990	0.83675	0.76029
1.00000	1.00000	0.90000	0.80000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000
0.72359	0.72758	0.73032	0.73378	0.73799	0.74397	0.74700	0.74990	0.75308	0.76029
0.85055	0.76921	0.86386	0.86712	0.78511	0.79143	0.79838	0.80195	0.81110	0.90518
0.90000	1.00000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000
0.76549	0.76921	0.77747	0.78041	0.78511	0.79143	0.79838	0.80195	0.81110	0.81466
0.91470	0.82925	0.83724	0.84383	0.85404	0.86720	0.97628	0.89626	0.91387	0.99041
0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000
0.82323	0.82925	0.83724	0.84383	0.85404	0.86720	0.87865	0.89626	0.91387	0.99041

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.721710

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.79620	0.71938	0.99900	0.77705	0.84928	0.90289	0.92069	0.74733	0.78654	0.75405
0.81784	0.80624	0.67070	0.81205	0.79686	0.70335	0.70650	0.81530	0.85060	0.96907
0.48610	0.51047	0.52713	0.54122	0.54712	0.55831	0.56899	0.57380	0.57907	0.58645
0.93503	0.69112	0.90337	0.94963	0.93293	0.90056	0.80049	0.91885	0.77207	0.88303
0.80881	0.98982	0.79996	0.72210	0.79161	0.96873	0.94426	0.90715	0.99758	0.83372
0.59084	0.59774	0.60361	0.60744	0.61090	0.61306	0.61825	0.62286	0.62740	0.62980
0.95625	0.83592	0.87061	0.91644	0.90617	0.75290	0.98011	0.94958	0.91038	0.90736
0.86140	0.84042	0.99660	0.83466	0.79831	0.88889	0.85492	0.84409	0.82316	0.79052
0.63239	0.63774	0.64271	0.64578	0.64868	0.65215	0.65644	0.65985	0.66257	0.66652
0.87220	0.98230	0.97966	0.86464	0.85938	0.94319	0.93309	0.92893	0.87788	0.90419
0.84144	0.83872	0.79572	0.79993	0.99896	0.78403	0.92637	0.74687	0.85296	0.90948
0.67072	0.67514	0.67977	0.68192	0.68417	0.68830	0.69116	0.69372	0.69663	0.69910
0.80277	0.99370	0.93835	0.96619	0.89490	0.89859	0.92118	0.94202	0.97676	0.98130
0.88400	0.86401	0.99687	0.83560	0.90644	0.92957	0.87851	0.83457	0.83833	0.84856
0.70112	0.70279	0.70580	0.71027	0.71235	0.71637	0.71933	0.72150	0.72520	0.72677
0.85552	0.84144	0.89875	0.95271	0.90472	0.90778	0.84377	0.91994	0.94796	0.78198
0.92006	0.87438	0.89390	0.82442	0.90748	0.99973	0.93227	0.92186	0.96063	0.98550
0.73153	0.73570	0.73756	0.74079	0.74398	0.74676	0.74994	0.75448	0.75800	0.76084
0.84391	0.93581	0.98402	0.89383	0.92478	0.97452	0.91807	0.99887	0.94390	0.90614
0.99697	0.82205	0.83594	0.96302	0.90187	0.85133	0.98088	0.84962	0.94134	0.95598
0.76286	0.76633	0.76887	0.77089	0.77435	0.77661	0.78038	0.78211	0.78448	0.78677
0.98189	0.90028	0.96386	0.97918	0.83999	0.97420	1.00000	0.89014	0.95663	0.94848
0.83813	0.99282	0.98880	0.85091	0.98554	0.99831	0.95155	0.92408	0.90547	0.95548
0.79331	0.79545	0.79758	0.80307	0.80582	0.81026	0.81427	0.81818	0.82233	0.82595
0.91910	0.96091	0.91161	0.99277	0.86938	0.91330	0.95782	0.95197	0.96898	0.97951
0.94521	0.99382	0.98005	0.96930	0.97365	0.94924	0.94429	0.99496	0.88782	0.89763
0.83058	0.83285	0.83601	0.83987	0.84362	0.85047	0.85331	0.85676	0.86028	0.86478
0.97355	0.99070	0.97798	0.89797	0.99699	0.91596	0.95861	0.99991	0.96576	1.00000
0.89431	0.93434	0.97386	1.00000	0.98233	0.99648	0.98308	0.95033	0.98538	0.99996
0.87053	0.87685	0.88628	0.89173	0.89742	0.91061	0.92046	0.93175	0.95164	0.99505

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01174 AVERAGE = 0.72018 EQUIVALENT BINOMIAL VARIANCE = 0.02008 EFFICIENCY = 0.58442

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.52104	0.50213	0.64323	0.52713	0.54205	0.54712	0.55595	0.56627	0.57190	0.57907
0.90000	1.00000	0.80000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.46893	0.50213	0.51458	0.52713	0.54205	0.54712	0.55595	0.56627	0.57190	0.57907
0.64799	0.58867	0.59404	0.59925	0.67195	0.60985	0.61220	0.61511	0.61881	0.62302
0.90000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000
0.58319	0.58867	0.59404	0.59925	0.60476	0.60985	0.61220	0.61511	0.61881	0.62302
0.62787	0.63069	0.63354	0.63934	0.64322	0.64632	0.64965	0.65356	0.65717	0.66059
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.62787	0.63069	0.63354	0.63934	0.64322	0.64632	0.64965	0.65356	0.65717	0.66059
0.66300	0.66770	0.67097	0.67535	0.68010	0.68327	0.76219	0.68837	0.69153	0.69349
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000
0.66300	0.66770	0.67097	0.67535	0.68010	0.68327	0.68597	0.68837	0.69153	0.69349
0.69621	0.77568	0.70060	0.87784	0.70499	0.70864	0.71076	0.71360	0.79610	0.71945
1.00000	0.90000	1.00000	0.80000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000
0.69621	0.69811	0.70060	0.70227	0.70499	0.70864	0.71076	0.71360	0.71649	0.71945
0.72191	0.72520	0.72710	0.73153	0.73593	0.73847	0.74144	0.74404	0.83058	0.74994
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000
0.72191	0.72520	0.72710	0.73153	0.73593	0.73847	0.74144	0.74404	0.74753	0.74994
0.75476	0.75800	0.76084	0.76431	0.76687	0.76895	0.85771	0.77521	0.77798	0.78141
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000
0.75476	0.75800	0.76084	0.76431	0.76687	0.76895	0.77194	0.77521	0.77798	0.78141
0.78319	0.78592	0.79240	0.79545	0.79758	0.89216	0.89693	0.81109	0.81531	0.82020
1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	0.90000	1.00000	1.00000	1.00000
0.78319	0.78592	0.79240	0.79545	0.79758	0.80294	0.80724	0.81109	0.81531	0.82020
0.82424	0.91882	0.83157	0.83319	0.83731	0.93375	0.84574	0.85213	0.85658	0.86022
1.00000	0.90000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000
0.82424	0.82693	0.83157	0.83319	0.83731	0.84038	0.84574	0.85213	0.85658	0.86022
0.86459	0.87051	0.87685	0.88756	0.89328	0.90529	0.91598	0.92817	0.94815	0.99505
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.86459	0.87051	0.87685	0.88756	0.89328	0.90529	0.91598	0.92817	0.94815	0.99505

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.721710

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.68955	0.72859	0.80867	0.80391	0.88681	0.87748	0.88780	0.76976	0.72733	0.80176
0.75826	0.85074	0.71656	0.81166	0.80322	0.76820	0.85158	0.79538	0.84423	0.78180
0.48747	0.50907	0.53470	0.54770	0.55670	0.56927	0.57430	0.58023	0.58627	0.59179
0.87043	0.92739	0.76091	0.96878	0.86069	0.97700	0.98887	0.77581	0.85567	0.89825
0.81905	0.90952	0.84805	0.82663	0.78390	0.78448	0.69553	0.88061	0.95133	0.89580
0.60221	0.60766	0.61083	0.61490	0.62219	0.62667	0.63034	0.63600	0.63828	0.64303
0.89503	0.84132	0.76092	0.84104	0.94835	0.86949	0.95671	0.93340	0.91491	0.90345
0.82038	0.81562	0.90752	0.92489	0.70731	0.79734	0.92958	0.86506	0.84480	0.88169
0.64513	0.64803	0.65233	0.65545	0.65953	0.66297	0.66798	0.67151	0.67504	0.67926
0.94361	0.80937	0.85770	0.91699	0.97207	0.85038	0.87593	0.86379	0.88966	0.97990
0.93043	0.95439	0.84125	0.75465	0.85519	0.90187	0.81031	0.88317	0.92831	0.88301
0.68175	0.68466	0.68949	0.69201	0.69570	0.69905	0.70060	0.70389	0.70722	0.70870
0.96912	0.92852	0.92723	0.94817	0.99999	0.90372	0.94317	0.98108	0.91540	0.80860
0.79837	0.77416	0.88776	0.86006	0.82314	0.84298	0.90272	0.79734	0.91932	0.91605
0.71098	0.71309	0.71660	0.71840	0.72142	0.72596	0.72953	0.73158	0.73365	0.73742
0.91742	0.94569	0.86526	0.77609	0.77886	0.93012	0.79529	0.95819	0.82543	0.87030
0.86022	0.83511	0.92623	0.98464	0.96342	0.96410	0.98606	0.82872	0.92529	0.94598
0.74007	0.74116	0.74346	0.74685	0.75030	0.75256	0.75599	0.75820	0.76140	0.76368
0.87628	0.84309	0.94209	0.90657	0.96044	0.87969	0.99981	0.89046	0.96073	0.98069
0.89354	0.93766	0.96754	0.95569	0.91718	0.95066	0.79200	0.92812	0.83356	0.84091
0.76675	0.76877	0.77227	0.77544	0.77725	0.78154	0.78355	0.78790	0.79219	0.79585
0.89816	0.84492	0.96492	0.93453	0.94709	0.97407	0.94176	0.98227	0.89757	0.97891
0.90693	0.97632	0.86254	0.99952	0.95434	0.85860	0.95381	0.88472	0.93591	0.99401
0.79779	0.80082	0.80486	0.80733	0.81001	0.81369	0.81612	0.81820	0.82112	0.82446
0.92736	0.91240	0.99598	0.87416	1.00000	0.99964	0.89675	0.91577	0.95844	0.87500
0.96408	0.99925	0.93761	0.99720	0.93055	0.92347	0.99981	0.95991	0.94247	0.99997
0.82958	0.83180	0.84027	0.84753	0.85337	0.85627	0.86100	0.86447	0.86894	0.87405
0.97700	0.97844	0.96849	0.92813	0.93994	0.99920	0.99311	0.97385	1.00000	0.99958
0.95422	0.95879	0.91789	1.00000	0.99988	0.98710	1.00000	0.99975	0.96908	1.00000
0.87762	0.88637	0.88878	0.89706	0.90628	0.91395	0.92271	0.93373	0.95860	0.99573

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01140 AVERAGE = 0.72686 EQUIVALENT BINOMIAL VARIANCE = 0.02008 EFFICIENCY = 0.56750

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.47349	0.50613	0.53073	0.53980	0.55047	0.55659	0.62829	0.56944	0.57604	0.58117
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000
0.47349	0.50613	0.53073	0.53980	0.55047	0.55659	0.56546	0.56944	0.57604	0.58117
0.58658	0.59448	0.60284	0.60756	0.61083	0.68303	0.68998	0.62606	0.63070	0.70576
1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	0.90000	1.00000	1.00000	0.90000
0.58658	0.59448	0.60284	0.60756	0.61083	0.61473	0.62098	0.62606	0.63070	0.63518
0.63772	0.64199	0.64485	0.64750	0.65081	0.65462	0.65824	0.66111	0.66542	0.67053
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.63772	0.64199	0.64485	0.64750	0.65081	0.65462	0.65824	0.66111	0.66542	0.67053
0.74792	0.67710	0.68142	0.68430	0.76336	0.69095	0.69315	0.69695	0.69933	0.70138
0.90000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000
0.67313	0.67710	0.68142	0.68430	0.68703	0.69095	0.69315	0.69695	0.69933	0.70138
0.70460	0.70746	0.70950	0.71201	0.71385	0.71665	0.71890	0.72184	0.80572	0.72849
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000
0.70460	0.70746	0.70950	0.71201	0.71385	0.71665	0.71890	0.72184	0.72514	0.72849
0.73153	0.73319	0.73496	0.73937	0.74108	0.74290	0.74513	0.74978	0.75232	0.75528
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.73153	0.73319	0.73496	0.73937	0.74108	0.74290	0.74513	0.74978	0.75232	0.75528
0.75757	0.76005	0.76368	0.76660	0.76930	0.77340	0.77643	0.77909	0.78246	0.78756
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.75757	0.76005	0.76368	0.76660	0.76930	0.77340	0.77643	0.77909	0.78246	0.78756
0.79090	0.79585	0.79725	0.80079	0.80486	0.80764	0.81022	0.81369	0.81654	0.81886
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.79090	0.79585	0.79725	0.80079	0.80486	0.80764	0.81022	0.81369	0.81654	0.81886
0.91336	0.82446	0.83012	0.83268	0.84276	0.85039	0.85460	0.85832	0.86208	0.86572
0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.82202	0.82446	0.83012	0.83268	0.84276	0.85039	0.85460	0.85832	0.86208	0.86572
0.87280	0.87723	0.88505	0.88823	0.89856	0.90882	0.92221	0.93249	0.95860	0.99573
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.87280	0.87723	0.88505	0.88823	0.89856	0.90882	0.92221	0.93249	0.95860	0.99573

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.728271

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.77731	0.80070	0.84002	0.89389	0.86308	0.77199	0.86766	0.74164	0.91411	0.89637
0.89891	0.73635	0.81013	0.76437	0.92403	0.99952	0.79664	0.97784	0.80192	0.76252
0.48480	0.51294	0.53797	0.54710	0.55801	0.56746	0.57641	0.58005	0.58690	0.59357
0.74083	0.78816	0.80666	0.98965	0.87742	0.81472	0.98106	0.87099	0.92614	0.79426
0.86580	0.88188	0.91374	0.83486	0.86752	0.90230	0.88127	0.83233	0.80925	0.79947
0.59791	0.60470	0.60861	0.61330	0.61628	0.62092	0.62414	0.62756	0.63006	0.63499
0.82708	0.77326	0.90838	0.82036	0.89748	0.99739	0.92215	0.99789	0.83267	0.87527
0.78923	0.91343	0.90076	0.91510	0.93829	0.81463	0.83978	0.90264	0.93563	0.83382
0.63930	0.64409	0.64664	0.65116	0.65558	0.65873	0.66232	0.66584	0.66978	0.67336
0.84773	0.91382	0.88859	0.82999	0.83946	0.96884	0.94989	0.81496	0.87803	0.80670
0.80979	0.78248	0.84211	0.85232	0.99303	0.95718	0.80056	0.96989	0.96298	0.88033
0.67678	0.67977	0.68549	0.68875	0.69224	0.69545	0.69884	0.70166	0.70514	0.70801
0.95291	0.89909	0.88553	0.98996	0.86165	0.90370	0.81896	0.98467	0.89114	0.96524
0.85482	0.80504	0.94768	0.85374	0.86515	0.91453	0.88971	0.90441	0.97294	0.81622
0.71226	0.71567	0.71741	0.71969	0.72180	0.72468	0.72633	0.72870	0.73103	0.73273
0.94327	0.93914	0.99723	0.90224	0.99860	0.94975	0.80285	0.99997	0.97672	0.97534
0.87335	0.81542	0.88707	0.90595	0.82624	0.91191	0.94024	0.99837	0.80655	0.78308
0.73486	0.73740	0.73927	0.74250	0.74558	0.74910	0.75488	0.75761	0.76123	0.76334
0.92919	0.93990	0.90905	0.88946	1.00000	0.87050	0.84737	0.86143	0.91910	0.87857
0.90310	0.94590	0.91001	0.91170	0.91897	0.93318	0.99800	0.92084	0.92162	0.99999
0.76594	0.76759	0.77076	0.77367	0.77794	0.78074	0.78365	0.78770	0.79075	0.79504
0.88706	0.99128	0.88318	0.99996	0.97228	0.99442	0.88550	0.93214	0.90374	0.91034
0.99210	0.82156	0.90907	0.88489	0.89063	0.96818	0.92373	0.96498	1.00000	0.95882
0.79725	0.79880	0.80271	0.80501	0.80943	0.81276	0.81534	0.82036	0.82533	0.82792
0.84478	0.91916	0.99987	0.89196	0.99085	0.95812	0.91040	0.99591	0.98534	0.97309
0.98460	0.96415	0.93209	0.98057	0.93481	0.99982	0.99985	0.91440	0.92586	0.94307
0.83176	0.83598	0.84059	0.84388	0.84828	0.85119	0.85447	0.85875	0.86221	0.86719
0.92788	0.95861	0.91378	0.90756	0.91917	0.96754	0.93828	1.00000	0.99224	0.99837
0.97176	0.94953	0.98321	0.98375	0.99999	0.96127	0.98141	0.94030	0.98472	0.99853
0.87118	0.87805	0.88390	0.88967	0.89704	0.90709	0.91609	0.92649	0.94847	0.98720

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01107 AVERAGE = 0.73097 EQUIVALENT BINOMIAL VARIANCE = 0.01979 EFFICIENCY = 0.55935

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.48480	0.51294	0.53797	0.54599	0.55429	0.56573	0.57639	0.57999	0.58681	0.59207
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.48480	0.51294	0.53797	0.54599	0.55429	0.56573	0.57639	0.57999	0.58681	0.59207
0.59740	0.60410	0.60842	0.61263	0.61599	0.62049	0.62317	0.62626	0.62928	0.63445
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.59740	0.60410	0.60842	0.61263	0.61599	0.62049	0.62317	0.62626	0.62928	0.63445
0.63879	0.64228	0.64616	0.65021	0.65509	0.65803	0.66194	0.66474	0.66892	0.67145
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.63879	0.64228	0.64616	0.65021	0.65509	0.65803	0.66194	0.66474	0.66892	0.67145
0.67483	0.67905	0.68218	0.68828	0.69107	0.69401	0.69793	0.70013	0.70389	0.70652
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.67483	0.67905	0.68218	0.68828	0.69107	0.69401	0.69793	0.70013	0.70389	0.70652
0.71099	0.79256	0.71702	0.71855	0.72090	0.72347	0.72518	0.72783	0.73029	0.73204
1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.71099	0.71330	0.71702	0.71855	0.72090	0.72347	0.72518	0.72783	0.73029	0.73204
0.73373	0.73523	0.73836	0.74140	0.74446	0.74834	0.75141	0.75626	0.75980	0.76268
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.73373	0.73523	0.73836	0.74140	0.74446	0.74834	0.75141	0.75626	0.75980	0.76268
0.76467	0.76660	0.76974	0.77241	0.77715	0.78006	0.78251	0.78585	0.78962	0.79362
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.76467	0.76660	0.76974	0.77241	0.77715	0.78006	0.78251	0.78585	0.78962	0.79362
0.79637	0.79828	0.80138	0.80423	0.80859	0.81138	0.81490	0.81953	0.82291	0.82721
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.79637	0.79828	0.80138	0.80423	0.80859	0.81138	0.81490	0.81953	0.82291	0.82721
0.83054	0.83570	0.83969	0.84210	0.84743	0.85095	0.85351	0.85811	0.86154	0.86677
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.83054	0.83570	0.83969	0.84210	0.84743	0.85095	0.85351	0.85811	0.86154	0.86677
0.87086	0.87641	0.88384	0.88893	0.89682	0.90709	0.91609	0.92649	0.94847	0.98720
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.87086	0.87641	0.88384	0.88893	0.89682	0.90709	0.91609	0.92649	0.94847	0.98720

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.900000	-1.281600	100.000000	10
THRUST (FN)	0.900000	-1.644900	1.644900	10
MIXTURE RATIO (RM)	0.900000	-1.644900	1.644900	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.729000 OVERALL RELIABILITY 0.728271

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.68201	0.78547	0.66466	0.72274	0.88461	0.75529	0.92464	0.76599	0.87769	0.90099
0.78986	0.81544	0.88229	0.90142	0.93594	0.93286	0.78815	0.87651	0.90613	0.99214
0.48554	0.51482	0.53007	0.55140	0.56587	0.57357	0.58156	0.58653	0.59074	0.59883
0.77543	0.72119	0.86388	0.76120	0.84279	0.85236	0.87315	0.80263	0.87946	0.81174
0.83741	0.99242	0.95812	0.90187	0.82012	0.80721	0.88070	0.79373	0.91707	0.79554
0.60262	0.60568	0.61176	0.61660	0.62063	0.62597	0.62855	0.63277	0.63769	0.64180
0.96839	0.95080	0.87221	0.81189	0.87524	0.88407	0.73769	0.82056	0.91845	0.85745
0.83995	0.73315	0.81328	0.98050	0.94603	0.87463	0.97529	0.91651	0.95719	0.95434
0.64371	0.64896	0.65208	0.65696	0.66093	0.66458	0.66804	0.67220	0.67505	0.67817
0.89856	0.86408	0.81863	0.88933	0.96015	0.97298	0.85229	0.93612	0.91282	0.92988
0.98793	0.95502	0.88998	0.86824	0.81432	0.87728	0.97346	0.82718	1.00000	0.90927
0.68097	0.68449	0.68735	0.68974	0.69160	0.69450	0.69702	0.69958	0.70258	0.70466
0.96011	0.88606	0.89048	0.89184	0.90847	0.77554	0.82909	0.76911	0.89223	0.94894
0.76858	0.93287	0.84235	0.90628	0.84224	0.92831	0.94276	0.96925	0.82062	0.94242
0.70712	0.70893	0.71193	0.71549	0.71843	0.71994	0.72469	0.72802	0.73153	0.73487
0.80094	0.98777	0.97032	0.99240	0.94529	0.85432	0.93799	0.99016	0.86953	0.96608
0.95375	0.85018	0.79785	0.77183	0.79069	0.93858	0.80413	0.89821	0.88127	0.91630
0.73792	0.74064	0.74289	0.74482	0.74665	0.74928	0.75220	0.75376	0.75565	0.75837
0.90043	0.97004	0.97128	0.81280	0.95090	0.93207	0.92460	0.83901	0.95600	1.00000
0.96906	0.82062	0.99776	0.96375	0.98883	0.99072	0.93827	0.98241	0.87674	0.84265
0.76115	0.76592	0.76909	0.77451	0.77707	0.77910	0.78123	0.78541	0.78926	0.79277
0.97615	0.98182	0.94839	0.90759	0.98420	0.87959	0.83745	0.92650	0.91097	0.93512
0.90619	0.86894	0.85752	0.89916	0.82324	1.00000	0.98925	0.91928	0.91914	0.90813
0.79758	0.80017	0.80424	0.80673	0.81006	0.81474	0.81723	0.81977	0.82185	0.82354
0.93985	0.83528	0.87761	0.88745	0.99480	0.94477	0.91022	0.98319	0.87138	0.99877
0.97136	1.00000	0.99619	0.96099	0.90476	0.91274	0.94658	0.95241	0.99967	0.93223
0.82621	0.83144	0.83664	0.84153	0.84583	0.85198	0.85513	0.86171	0.86626	0.87155
1.00000	0.99725	0.93747	0.90765	0.92989	0.92919	0.98398	0.99595	1.00000	1.00000
0.94853	0.92248	0.95922	0.99052	0.99672	0.98801	0.96822	0.96636	0.98369	1.00000
0.87724	0.88259	0.88633	0.89390	0.90311	0.90922	0.92237	0.94261	0.96009	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.01118 AVERAGE = 0.73217 EQUIVALENT BINOMIAL VARIANCE = 0.01979 EFFICIENCY = 0.56473

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.48062	0.50452	0.52754	0.54661	0.62656	0.57113	0.57906	0.58457	0.58903	0.59645
1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000
0.48062	0.50452	0.52754	0.54661	0.56390	0.57113	0.57906	0.58457	0.58903	0.59645
0.60112	0.60481	0.61043	0.61555	0.61898	0.62483	0.62789	0.63245	0.63654	0.64109
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.60112	0.60481	0.61043	0.61555	0.61898	0.62483	0.62789	0.63245	0.63654	0.64109
0.64260	0.64577	0.65129	0.65620	0.66010	0.66441	0.66716	0.74637	0.67382	0.67755
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.90000	1.00000	1.00000
0.64260	0.64577	0.65129	0.65620	0.66010	0.66441	0.66716	0.67174	0.67382	0.67755
0.68056	0.68357	0.68680	0.68953	0.69129	0.69427	0.69668	0.69899	0.70199	0.70445
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.68056	0.68357	0.68680	0.68953	0.69129	0.69427	0.69668	0.69899	0.70199	0.70445
0.70691	0.70891	0.71192	0.79436	0.71769	0.71946	0.72461	0.72751	0.73082	0.73391
1.00000	1.00000	1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.70691	0.70891	0.71192	0.71492	0.71769	0.71946	0.72461	0.72751	0.73082	0.73391
0.73634	0.73907	0.74152	0.74402	0.74616	0.74871	0.75078	0.75323	0.75548	0.75797
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.73634	0.73907	0.74152	0.74402	0.74616	0.74871	0.75078	0.75323	0.75548	0.75797
0.76092	0.76469	0.76812	0.77345	0.77515	0.77876	0.78004	0.78436	0.78812	0.79098
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.76092	0.76469	0.76812	0.77345	0.77515	0.77876	0.78004	0.78436	0.78812	0.79098
0.79674	0.79828	0.80228	0.80549	0.80823	0.81156	0.81632	0.81941	0.82116	0.82343
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.79674	0.79828	0.80228	0.80549	0.80823	0.81156	0.81632	0.81941	0.82116	0.82343
0.82576	0.83107	0.83614	0.83961	0.84578	0.85067	0.85436	0.85923	0.86577	0.86996
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.82576	0.83107	0.83614	0.83961	0.84578	0.85067	0.85436	0.85923	0.86577	0.86996
0.87593	0.88098	0.88633	0.89390	0.90311	0.90922	0.92237	0.94261	0.96009	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.87593	0.88098	0.88633	0.89390	0.90311	0.90922	0.92237	0.94261	0.96009	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.873269

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.92207	0.87514	0.97395	0.90981	0.91546	0.99437	0.98796	0.99698	0.95007	1.00000
0.99540	0.99989	0.91294	0.99950	1.00000	0.97362	0.98120	1.00000	0.99771	0.99974
0.85460	0.87504	0.88916	0.89385	0.90390	0.90837	0.91089	0.91281	0.91614	0.91938
0.98254	0.98398	1.00000	0.93862	0.99940	0.93745	0.93822	0.95349	1.00000	0.97662
0.96959	0.93950	0.99991	0.99209	1.00000	1.00000	1.00000	0.98714	0.94634	0.99496
0.92245	0.92446	0.92712	0.93120	0.93522	0.93699	0.93821	0.94123	0.94327	0.94505
1.00000	0.95983	1.00000	1.00000	0.97457	0.98440	0.96710	0.96221	0.98874	0.99892
0.95408	0.99843	0.98125	0.95774	0.99996	0.96998	0.99996	0.99618	0.97160	1.00000
0.94677	0.94801	0.95003	0.95175	0.95315	0.95486	0.95658	0.95854	0.96066	0.96181
0.98280	0.99881	0.99697	0.97404	0.97108	0.96774	0.97586	0.98257	0.97699	0.98879
0.97975	0.97323	0.99946	0.99210	0.99896	1.00000	1.00000	0.98740	0.99383	0.98328
0.96290	0.96428	0.96526	0.96621	0.96689	0.96774	0.96895	0.97019	0.97096	0.97225
1.00000	0.99991	0.99442	0.98804	0.97624	0.97686	0.97826	0.97883	0.99999	1.00000
0.97299	0.97593	0.99963	1.00000	1.00000	0.99999	0.99931	0.99970	1.00000	0.99332
0.97299	0.97387	0.97465	0.97562	0.97624	0.97685	0.97758	0.97853	0.97972	0.98061
0.99960	0.98248	0.99839	1.00000	0.99926	0.99739	0.98548	0.98561	1.00000	0.98810
0.98181	0.99979	0.98623	0.98960	1.00000	0.98664	0.99953	1.00000	1.00000	0.99878
0.98142	0.98227	0.98312	0.98365	0.98383	0.98406	0.98501	0.98561	0.98619	0.98664
0.99810	0.99723	0.99171	0.99861	1.00000	0.99030	1.00000	1.00000	1.00000	1.00000
0.98933	0.99107	0.99700	1.00000	0.99494	0.99994	0.99178	1.00000	1.00000	1.00000
0.98746	0.98827	0.98874	0.98933	0.98975	0.99024	0.99076	0.99131	0.99197	0.99232
1.00000	0.99310	1.00000	0.99475	0.99719	0.99818	1.00000	1.00000	0.99959	0.99923
1.00000	1.00000	0.99533	0.99909	1.00000	0.99672	1.00000	0.99510	1.00000	0.99963
0.99277	0.99310	0.99343	0.99375	0.99401	0.99451	0.99465	0.99510	0.99550	0.99575
0.99743	0.99642	0.99983	0.99995	1.00000	0.99999	0.99911	0.99826	0.99850	1.00000
1.00000	1.00000	0.99853	0.99860	1.00000	0.99752	1.00000	1.00000	1.00000	0.99873
0.99622	0.99642	0.99669	0.99704	0.99732	0.99751	0.99780	0.99826	0.99850	0.99873
0.99905	1.00000	0.99996	0.99958	1.00000	0.99985	1.00000	1.00000	1.00000	1.00000
1.00000	0.99919	0.99947	1.00000	0.99970	1.00000	1.00000	1.00000	1.00000	1.00000
0.99905	0.99919	0.99943	0.99958	0.99970	0.99985	0.99996	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00934 AVERAGE = 0.87224 EQUIVALENT BINOMIAL VARIANCE = 0.01107 EFFICIENCY = 0.84422

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.97826	0.90993	0.93586	0.96686	0.98164	0.99375	1.00000	0.91614	0.93644	0.94855
0.60000	0.70000	0.70000	0.70000	0.70000	0.70000	0.70000	0.80000	0.80000	0.80000
0.58696	0.63695	0.65511	0.67680	0.68715	0.69563	0.70000	0.73292	0.74915	0.75884
0.96138	0.96380	0.96824	0.97270	0.97520	0.97910	0.98317	0.98594	0.98800	0.99072
0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000
0.76910	0.77104	0.77459	0.77816	0.78016	0.78328	0.78653	0.78875	0.79040	0.79257
0.99320	0.99481	0.99632	0.99765	0.99905	0.88880	0.89198	0.90604	0.82061	0.91739
0.80000	0.80000	0.80000	0.80000	0.80000	0.90000	0.90000	0.90000	1.00000	0.90000
0.79456	0.79585	0.79705	0.79812	0.79924	0.79992	0.80279	0.81544	0.82061	0.82565
0.92464	0.93282	0.93832	0.94510	0.94866	0.95187	0.95486	0.96060	0.96313	0.96634
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.83218	0.83954	0.84449	0.85059	0.85379	0.85668	0.85937	0.86454	0.86682	0.86971
0.96796	0.97035	0.97294	0.97448	0.87859	0.97848	0.98132	0.98312	0.98424	0.98572
0.90000	0.90000	0.90000	0.90000	1.00000	0.90000	0.90000	0.90000	0.90000	0.90000
0.87116	0.87332	0.87565	0.87703	0.87859	0.88063	0.88319	0.88481	0.88582	0.88715
0.98732	0.98876	0.99024	0.99099	0.89305	0.99308	0.99354	0.99456	0.99550	0.99629
0.90000	0.90000	0.90000	0.90000	1.00000	0.90000	0.90000	0.90000	0.90000	0.90000
0.88859	0.88988	0.89121	0.89189	0.89305	0.89377	0.89418	0.89510	0.89595	0.89666
0.99701	0.99742	0.99851	0.99919	0.99959	0.99993	1.00000	0.91089	0.91586	0.92640
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	1.00000
0.89731	0.89768	0.89866	0.89927	0.89963	0.89993	0.90000	0.91089	0.91586	0.92640
0.93691	0.94124	0.94600	0.95161	0.95513	0.96049	0.96478	0.96689	0.97181	0.97474
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.93691	0.94124	0.94600	0.95161	0.95513	0.96049	0.96478	0.96689	0.97181	0.97474
0.97677	0.97929	0.98124	0.98339	0.98406	0.98623	0.98827	0.98963	0.99132	0.99267
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97677	0.97929	0.98124	0.98339	0.98406	0.98623	0.98827	0.98963	0.99132	0.99267
0.99395	0.99480	0.99577	0.99656	0.99755	0.99839	0.99899	0.99956	0.99990	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99395	0.99480	0.99577	0.99656	0.99755	0.99839	0.99899	0.99956	0.99990	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.873269

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN) SECOND LINE - R(RM) THIRD LINE - R(ISP)R(FN)R(RM)

0.89279	0.97655	0.99104	1.00000	0.99755	0.92032	0.93566	0.99478	0.99188	1.00000
0.99900	0.91940	0.96291	1.00000	0.92262	0.99412	0.98135	0.99999	0.99934	0.95790
0.86001	0.88426	0.89537	0.90239	0.90947	0.91491	0.91821	0.92252	0.92621	0.92837
0.99736	0.96925	1.00000	0.94160	0.97554	0.95183	1.00000	0.97889	1.00000	0.99369
0.98565	0.99611	0.93613	0.99631	0.96343	0.99581	0.94601	0.99588	0.96077	0.99902
0.93054	0.93435	0.93576	0.93786	0.93987	0.94204	0.94439	0.94671	0.94979	0.95136
0.95314	0.97046	1.00000	1.00000	0.97937	0.99913	0.97051	0.96240	0.98610	0.99266
0.99946	0.98956	0.96392	0.95835	0.97865	0.97421	0.99255	1.00000	0.99344	0.98235
0.95262	0.95427	0.95600	0.95800	0.95847	0.95947	0.96062	0.96235	0.96325	0.96472
0.99033	0.98683	1.00000	0.99897	0.99980	0.99345	1.00000	1.00000	0.99737	1.00000
1.00000	1.00000	0.96732	0.99077	0.98346	0.97644	0.99913	0.97183	1.00000	0.97344
0.96571	0.96641	0.96732	0.96800	0.96896	0.97005	0.97087	0.97183	0.97276	0.97343
0.98758	0.98478	0.97999	0.97699	0.99994	1.00000	0.99336	0.98708	0.98053	1.00000
1.00000	0.99934	0.99992	1.00000	0.98031	0.99965	0.98530	0.99923	1.00000	0.98138
0.97416	0.97491	0.97574	0.97667	0.97731	0.97818	0.97876	0.97967	0.98053	0.98138
0.98531	1.00000	0.98401	0.99926	0.99893	1.00000	0.99512	0.99671	0.99801	0.99909
0.99689	0.98321	0.99973	1.00000	0.98617	0.98627	1.00000	0.99054	0.99586	1.00000
0.98222	0.98321	0.98375	0.98466	0.98511	0.98562	0.98627	0.98664	0.98730	0.98763
0.99860	0.99556	0.98960	0.98958	1.00000	0.99064	0.99110	1.00000	0.99202	0.99969
0.98942	1.00000	0.99989	0.99979	0.99079	1.00000	1.00000	1.00000	1.00000	0.99536
0.98804	0.98843	0.98904	0.98937	0.99011	0.99064	0.99110	0.99152	0.99191	0.99236
0.99571	0.99428	1.00000	1.00000	1.00000	0.99994	0.99693	1.00000	0.99894	1.00000
1.00000	1.00000	0.99391	0.99465	0.99925	0.99590	0.99845	1.00000	0.99903	0.99990
0.99280	0.99343	0.99391	0.99465	0.99493	0.99511	0.99539	0.99580	0.99610	0.99639
0.99928	0.99706	1.00000	0.99972	0.99781	0.99899	0.99919	0.99907	0.99993	1.00000
0.99966	1.00000	0.99785	0.99785	1.00000	0.99915	0.99923	1.00000	1.00000	1.00000
0.99680	0.99706	0.99725	0.99757	0.99781	0.99814	0.99842	0.99869	0.99914	0.99932
1.00000	0.99977	1.00000	1.00000	0.99996	0.99999	1.00000	1.00000	1.00000	1.00000
0.99986	0.99989	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99945	0.99966	0.99981	0.99988	0.99996	0.99999	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00865 AVERAGE = 0.87781 EQUIVALENT BINOMIAL VARIANCE = 0.01107 EFFICIENCY = 0.78154

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.98466	0.94188	0.84117	0.97932	0.99110	0.99722	0.89248	0.93427	0.94912	0.95427
0.60000	0.70000	0.80000	0.70000	0.70000	0.70000	0.80000	0.80000	0.80000	0.80000
0.59080	0.65932	0.67294	0.68552	0.69377	0.69805	0.71398	0.74741	0.75930	0.76342
0.96167	0.96984	0.97384	0.97876	0.98422	0.98690	0.98847	0.99038	0.99288	0.99542
0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000
0.76934	0.77588	0.77907	0.78301	0.78737	0.78952	0.79078	0.79230	0.79431	0.79633
0.99677	0.99781	0.99981	1.00000	0.90190	0.91140	0.92335	0.92837	0.93348	0.93717
0.80000	0.80000	0.80000	0.80000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.79741	0.79825	0.79985	0.80000	0.81171	0.82026	0.83101	0.83553	0.84013	0.84345
0.94092	0.94820	0.85698	0.95806	0.95947	0.96274	0.96515	0.96732	0.96896	0.97140
0.90000	0.90000	1.00000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.84683	0.85338	0.85698	0.86225	0.86352	0.86647	0.86864	0.87059	0.87206	0.87426
0.97392	0.97629	0.97816	0.97967	0.98178	0.98321	0.98468	0.98642	0.98754	0.98821
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.87653	0.87866	0.88035	0.88170	0.88360	0.88489	0.88621	0.88778	0.88879	0.88939
0.98879	0.99064	0.99152	0.99262	0.99424	0.99497	0.99567	0.99674	0.99736	0.99808
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.88991	0.89157	0.89237	0.89336	0.89482	0.89547	0.89610	0.89707	0.89762	0.89827
0.99889	0.99937	0.99964	0.99994	1.00000	1.00000	0.90988	0.91902	0.92955	0.93576
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000
0.89900	0.89943	0.89967	0.89995	0.90000	0.90000	0.90988	0.91902	0.92955	0.93576
0.94365	0.95149	0.95440	0.95870	0.96291	0.96591	0.96745	0.97031	0.97196	0.97416
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.94365	0.95149	0.95440	0.95870	0.96291	0.96591	0.96745	0.97031	0.97196	0.97416
0.97574	0.97742	0.98080	0.98294	0.98507	0.98579	0.98800	0.98960	0.99167	0.99343
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97574	0.97742	0.98080	0.98294	0.98507	0.98579	0.98800	0.98960	0.99167	0.99343
0.99426	0.99535	0.99642	0.99759	0.99829	0.99893	0.99958	0.99982	0.99999	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99426	0.99535	0.99642	0.99759	0.99829	0.99893	0.99958	0.99982	0.99999	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.960596

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.96045	0.99944	0.93270	0.99905	0.94900	0.99702	1.00000	0.94145	0.99951	0.92922
0.96290	0.89253	0.96180	0.99760	1.00000	0.91373	0.99971	0.97669	0.92212	1.00000
0.87453	0.88757	0.89707	0.90236	0.90653	0.91035	0.91639	0.91951	0.92135	0.92493
0.99991	0.98022	0.99832	0.99051	0.96691	0.99701	0.97838	0.95469	0.94846	1.00000
0.98135	0.94929	1.00000	0.94956	0.97013	0.98198	0.99921	0.99992	0.99535	0.94570
0.92703	0.93051	0.93286	0.93507	0.93796	0.94018	0.94176	0.94298	0.94405	0.94570
0.98154	0.98101	0.99984	0.99162	0.99884	0.99998	0.99994	0.99600	0.97225	1.00000
0.99980	0.96939	0.96330	0.96189	0.96981	0.99552	0.98287	0.98411	1.00000	0.99033
0.94811	0.95098	0.95260	0.95383	0.95492	0.95744	0.95845	0.95996	0.96090	0.96263
0.98575	0.99757	0.99318	0.99403	0.99992	0.99970	0.99728	0.98902	0.99993	0.99867
0.97760	0.96779	0.99984	0.98817	1.00000	1.00000	0.99061	1.00000	0.99845	0.98119
0.96367	0.96483	0.96597	0.96697	0.96756	0.96860	0.96936	0.97016	0.97090	0.97168
1.00000	1.00000	1.00000	0.99988	0.99354	0.99577	0.98666	1.00000	0.98555	0.98362
0.99798	1.00000	0.97651	0.97482	0.98362	0.99784	0.99092	1.00000	0.99991	1.00000
0.97234	0.97290	0.97394	0.97470	0.97586	0.97656	0.97769	0.97879	0.97934	0.98018
0.98510	0.98675	1.00000	0.99066	0.98897	0.98943	0.99821	0.99519	1.00000	0.99835
0.99938	0.99489	0.98236	0.99417	0.99601	1.00000	0.98697	1.00000	0.98666	0.99484
0.98068	0.98163	0.98235	0.98333	0.98400	0.98450	0.98521	0.98584	0.98631	0.98752
1.00000	0.99918	0.98975	0.99740	0.99070	0.99999	1.00000	0.99935	0.99262	0.99574
0.98872	0.99703	1.00000	0.99294	1.00000	1.00000	0.99950	1.00000	1.00000	0.99968
0.98851	0.98903	0.98972	0.99036	0.99070	0.99099	0.99152	0.99206	0.99252	0.99282
0.99337	0.99999	0.99427	0.99997	1.00000	1.00000	0.99856	1.00000	1.00000	0.99829
0.99978	0.99348	1.00000	1.00000	0.99750	0.99500	1.00000	1.00000	0.99632	0.99940
0.99314	0.99347	0.99395	0.99414	0.99449	0.99500	0.99560	0.99606	0.99632	0.99669
0.99993	1.00000	0.99843	0.99864	0.99814	1.00000	0.99869	1.00000	0.99897	0.99926
1.00000	0.99878	0.99944	0.99932	1.00000	0.99867	1.00000	0.99989	1.00000	1.00000
0.99705	0.99747	0.99777	0.99796	0.99814	0.99842	0.99869	0.99884	0.99897	0.99926
0.99964	0.99979	1.00000	0.99990	0.99993	0.99998	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	0.99975	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99945	0.99964	0.99974	0.99987	0.99993	0.99998	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00190 AVERAGE = 0.96081 EQUIVALENT BINOMIAL VARIANCE = 0.00379 EFFICIENCY = 0.50278

FIRST LINE - R(ISP)R(FN)R(RM)				SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)		
0.89564	0.93312	0.94811	0.96691	0.97249	0.88538	0.88960	0.99118	0.99421	0.89707
0.90000	0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	0.90000	0.90000	1.00000
0.80607	0.83981	0.85330	0.87022	0.87524	0.88538	0.88960	0.89206	0.89479	0.89707
0.89887	0.99999	0.90263	0.90873	0.91452	0.91804	0.92108	0.92493	0.92703	0.93051
1.00000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.89887	0.89999	0.90263	0.90873	0.91452	0.91804	0.92108	0.92493	0.92703	0.93051
0.93286	0.93621	0.93867	0.94087	0.94234	0.94365	0.94500	0.94770	0.95050	0.95222
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.93286	0.93621	0.93867	0.94087	0.94234	0.94365	0.94500	0.94770	0.95050	0.95222
0.95384	0.95527	0.95768	0.95895	0.96021	0.96179	0.96315	0.96418	0.96571	0.96664
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95384	0.95527	0.95768	0.95895	0.96021	0.96179	0.96315	0.96418	0.96571	0.96664
0.96753	0.96861	0.96945	0.97025	0.97112	0.97191	0.97261	0.97328	0.97429	0.97530
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96753	0.96861	0.96945	0.97025	0.97112	0.97191	0.97261	0.97328	0.97429	0.97530
0.97629	0.97680	0.97851	0.97904	0.98011	0.98060	0.98163	0.98271	0.98346	0.98408
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97629	0.97680	0.97851	0.97904	0.98011	0.98060	0.98163	0.98271	0.98346	0.98408
0.98456	0.98548	0.98602	0.98688	0.98801	0.98901	0.98954	0.99040	0.99077	0.99134
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98456	0.98548	0.98602	0.98688	0.98801	0.98901	0.98954	0.99040	0.99077	0.99134
0.99182	0.99228	0.99267	0.99313	0.99355	0.99397	0.99421	0.99473	0.99549	0.99598
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99182	0.99228	0.99267	0.99313	0.99355	0.99397	0.99421	0.99473	0.99549	0.99598
0.99622	0.99668	0.99702	0.99751	0.99779	0.99800	0.99823	0.99854	0.99882	0.99897
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99622	0.99668	0.99702	0.99751	0.99779	0.99800	0.99823	0.99854	0.99882	0.99897
0.99925	0.99945	0.99964	0.99978	0.99992	0.99996	0.99999	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99925	0.99945	0.99964	0.99978	0.99992	0.99996	0.99999	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.960596

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.98826	0.94456	1.00000	0.97877	0.91109	0.99997	0.94868	1.00000	0.99808	0.97300
0.88668	0.94615	0.90102	0.92610	0.99832	0.91641	1.00000	0.94646	0.93268	0.95865
0.87627	0.89123	0.90042	0.90644	0.90957	0.91638	0.92175	0.92462	0.92907	0.93277
1.00000	0.99611	1.00000	0.94241	0.94698	0.98941	0.98252	1.00000	0.99854	0.98851
0.99949	0.96991	0.94038	1.00000	0.99779	0.95667	0.97915	0.98281	0.97411	1.00000
0.93531	0.93773	0.94037	0.94241	0.94489	0.94654	0.94838	0.94967	0.95198	0.95361
0.99984	0.98781	0.99994	0.99984	0.99806	0.99941	1.00000	1.00000	1.00000	1.00000
0.99326	1.00000	0.99690	0.99285	0.99152	0.98224	0.96572	0.96491	0.96459	0.96500
0.95623	0.95747	0.95875	0.96042	0.96141	0.96252	0.96368	0.96419	0.96459	0.96500
0.99851	1.00000	1.00000	0.97031	0.97525	0.99542	1.00000	1.00000	0.99998	0.99329
0.96703	0.96672	0.96757	0.99982	0.99928	1.00000	0.97641	0.97285	0.99744	1.00000
0.96558	0.96672	0.96757	0.96879	0.96939	0.97116	0.97192	0.97285	0.97359	0.97457
0.99363	0.97638	0.97746	1.00000	1.00000	1.00000	0.99993	0.99613	0.98276	0.99075
0.98987	1.00000	1.00000	0.98243	0.99909	0.98026	0.99575	1.00000	1.00000	0.99211
0.97588	0.97638	0.97746	0.97825	0.97916	0.97989	0.98075	0.98137	0.98197	0.98271
0.99959	0.98774	0.99790	0.98702	0.98575	1.00000	0.98946	1.00000	1.00000	0.99901
1.00000	0.99701	1.00000	0.99962	1.00000	0.99234	0.99910	0.98742	0.99811	0.98943
0.98353	0.98402	0.98456	0.98518	0.98575	0.98629	0.98675	0.98723	0.98793	0.98845
0.99267	1.00000	0.99093	1.00000	0.99389	0.99883	0.99399	0.99227	0.99279	0.99305
0.99934	0.99666	0.99940	0.99809	0.99700	0.99385	0.99801	1.00000	1.00000	1.00000
0.98919	0.98957	0.99000	0.99050	0.99091	0.99165	0.99201	0.99227	0.99276	0.99304
0.99853	1.00000	0.99948	0.99557	0.99618	0.99541	0.99951	1.00000	1.00000	1.00000
1.00000	0.99386	0.99476	0.99913	0.99899	1.00000	0.99952	0.99645	1.00000	1.00000
0.99346	0.99386	0.99424	0.99470	0.99517	0.99541	0.99588	0.99639	0.99667	0.99686
0.99949	0.99987	1.00000	1.00000	0.99816	1.00000	1.00000	1.00000	1.00000	1.00000
0.99763	0.99808	0.99955	1.00000	1.00000	0.99837	1.00000	0.99912	0.99993	1.00000
0.99712	0.99742	0.99761	0.99782	0.99816	0.99837	0.99873	0.99912	0.99933	0.99943
1.00000	1.00000	0.99983	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99968	0.99992	1.00000	0.99990	1.00000	0.99999	1.00000	1.00000	1.00000	1.00000
0.99966	0.99975	0.99983	0.99990	0.99998	0.99999	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00176 AVERAGE = 0.96262 EQUIVALENT BINOMIAL VARIANCE = 0.00379 EFFICIENCY = 0.46513

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.92192	0.94218	0.94838	0.96459	0.87446	0.88271	0.88794	0.99006	0.89301	0.99466
0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	1.00000	0.90000	1.00000	0.90000
0.82973	0.84796	0.85354	0.86813	0.87446	0.88271	0.88794	0.89105	0.89301	0.89520
0.99746	0.99990	0.90042	0.90644	0.90957	0.91650	0.92182	0.92592	0.93003	0.93449
0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.89771	0.89991	0.90042	0.90644	0.90957	0.91650	0.92182	0.92592	0.93003	0.93449
0.93665	0.94026	0.94241	0.94515	0.94732	0.94945	0.95136	0.95360	0.95636	0.95781
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.93665	0.94026	0.94241	0.94515	0.94732	0.94945	0.95136	0.95360	0.95636	0.95781
0.95894	0.96082	0.96179	0.96298	0.96392	0.96445	0.96492	0.96555	0.96673	0.96820
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95894	0.96082	0.96179	0.96298	0.96392	0.96445	0.96492	0.96555	0.96673	0.96820
0.96890	0.96988	0.97154	0.97243	0.97334	0.97442	0.97611	0.97644	0.97755	0.97834
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96890	0.96988	0.97154	0.97243	0.97334	0.97442	0.97611	0.97644	0.97755	0.97834
0.97939	0.97999	0.98087	0.98157	0.98230	0.98298	0.98387	0.98437	0.98499	0.98562
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97939	0.97999	0.98087	0.98157	0.98230	0.98298	0.98387	0.98437	0.98499	0.98562
0.98618	0.98669	0.98723	0.98796	0.98873	0.98927	0.98988	0.99050	0.99106	0.99167
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98618	0.98669	0.98723	0.98796	0.98873	0.98927	0.98988	0.99050	0.99106	0.99167
0.99211	0.99254	0.99302	0.99339	0.99372	0.99424	0.99486	0.99522	0.99563	0.99624
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99211	0.99254	0.99302	0.99339	0.99372	0.99424	0.99486	0.99522	0.99563	0.99624
0.99660	0.99682	0.99712	0.99742	0.99765	0.99787	0.99826	0.99866	0.99886	0.99926
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99660	0.99682	0.99712	0.99742	0.99765	0.99787	0.99826	0.99866	0.99886	0.99926
0.99942	0.99964	0.99974	0.99982	0.99991	0.99999	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99942	0.99964	0.99974	0.99982	0.99991	0.99999	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.969329

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.95400	1.00000	0.98372	0.96331	1.00000	0.92838	1.00000	0.99135	1.00000	1.00000
1.00000	1.00000	0.91395	0.99745	0.97829	0.99339	0.99368	1.00000	0.93832	0.94323
0.86438	0.89084	0.89907	0.90900	0.91429	0.92141	0.92402	0.92842	0.92996	0.93274
0.93900	0.98177	0.98827	0.99850	0.99973	0.97592	0.99826	0.99921	0.99267	0.98112
0.99500	0.99006	0.97827	1.00000	0.96112	0.99982	0.94787	0.99739	0.98812	0.97078
0.93431	0.93690	0.93987	0.94157	0.94351	0.94442	0.94571	0.94843	0.95036	0.95245
0.98943	0.99010	0.99999	0.98594	0.96838	0.96105	0.96319	0.97142	0.99616	0.99996
0.98059	0.99933	0.96268	0.97207	0.99280	1.00000	1.00000	0.99910	1.00000	0.96523
0.95452	0.95605	0.95737	0.95840	0.95987	0.96105	0.96216	0.96290	0.96388	0.96520
0.99992	0.97489	0.99670	0.98665	0.97018	0.97085	0.99139	0.97934	0.99893	1.00000
1.00000	0.99243	0.99043	0.99913	1.00000	1.00000	0.98009	0.99260	0.99043	0.99564
0.96621	0.96751	0.96850	0.96911	0.96996	0.97085	0.97153	0.97209	0.97318	0.97427
0.99187	1.00000	0.98331	1.00000	1.00000	0.99848	0.99965	1.00000	0.98200	0.99827
0.99995	0.99974	0.99944	0.99226	1.00000	0.99954	1.00000	0.98017	1.00000	0.99717
0.97527	0.97577	0.97705	0.97771	0.97854	0.97898	0.97951	0.98004	0.98076	0.98133
1.00000	1.00000	0.99951	0.99984	0.98546	1.00000	1.00000	1.00000	0.99655	0.98855
0.99339	0.98263	0.99660	1.00000	0.99955	0.98569	0.98706	0.98948	0.99090	1.00000
0.98207	0.98263	0.98321	0.98404	0.98502	0.98569	0.98614	0.98688	0.98749	0.98809
0.98846	0.99067	0.99219	0.99127	0.99184	0.99078	0.99969	1.00000	0.99197	0.99673
1.00000	1.00000	0.99973	0.99840	1.00000	1.00000	1.00000	1.00000	1.00000	0.99589
0.98846	0.98883	0.98924	0.98966	0.99004	0.99078	0.99106	0.99155	0.99197	0.99255
0.99297	1.00000	1.00000	0.99824	1.00000	0.99948	1.00000	0.99634	0.99903	1.00000
1.00000	0.99953	0.99996	0.99856	0.99968	0.99734	0.99770	1.00000	1.00000	1.00000
0.99297	0.99360	0.99402	0.99464	0.99489	0.99538	0.99584	0.99634	0.99679	0.99713
1.00000	0.99782	0.99834	1.00000	1.00000	0.99988	0.99891	0.99913	1.00000	1.00000
0.99981	0.99996	1.00000	0.99831	0.99958	1.00000	1.00000	1.00000	1.00000	0.99938
0.99741	0.99777	0.99808	0.99827	0.99852	0.99870	0.99891	0.99910	0.99923	0.99938
1.00000	1.00000	0.99995	1.00000	0.99996	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	0.99984	0.99997	0.99998	1.00000	1.00000	1.00000	1.00000
0.99957	0.99967	0.99973	0.99984	0.99992	0.99998	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00096 AVERAGE = 0.97126 EQUIVALENT BINOMIAL VARIANCE = 0.00297 EFFICIENCY = 0.32129

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.95942	0.98281	0.89228	0.89791	0.90787	0.91246	0.91818	0.92269	0.92662	0.92961
0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.86348	0.88453	0.89228	0.89791	0.90787	0.91246	0.91818	0.92269	0.92662	0.92961
0.93152	0.93393	0.93646	0.93936	0.94142	0.94283	0.94417	0.94547	0.94824	0.95028
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.93152	0.93393	0.93646	0.93936	0.94142	0.94283	0.94417	0.94547	0.94824	0.95028
0.95209	0.95441	0.95595	0.95725	0.95826	0.95938	0.96097	0.96203	0.96279	0.96364
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95209	0.95441	0.95595	0.95725	0.95826	0.95938	0.96097	0.96203	0.96279	0.96364
0.96513	0.96613	0.96751	0.96850	0.96911	0.96996	0.97085	0.97153	0.97209	0.97318
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96513	0.96613	0.96751	0.96850	0.96911	0.96996	0.97085	0.97153	0.97209	0.97318
0.97427	0.97527	0.97588	0.97706	0.97776	0.97858	0.97909	0.97970	0.98007	0.98086
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97427	0.97527	0.97588	0.97706	0.97776	0.97858	0.97909	0.97970	0.98007	0.98086
0.98136	0.98207	0.98267	0.98360	0.98463	0.98509	0.98590	0.98660	0.98725	0.98778
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98136	0.98207	0.98267	0.98360	0.98463	0.98509	0.98590	0.98660	0.98725	0.98778
0.98827	0.98856	0.98908	0.98930	0.98990	0.99024	0.99086	0.99136	0.99172	0.99223
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98827	0.98856	0.98908	0.98930	0.98990	0.99024	0.99086	0.99136	0.99172	0.99223
0.99271	0.99330	0.99383	0.99442	0.99477	0.99527	0.99577	0.99617	0.99672	0.99701
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99271	0.99330	0.99383	0.99442	0.99477	0.99527	0.99577	0.99617	0.99672	0.99701
0.99731	0.99774	0.99803	0.99825	0.99845	0.99867	0.99890	0.99907	0.99919	0.99936
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99731	0.99774	0.99803	0.99825	0.99845	0.99867	0.99890	0.99907	0.99919	0.99936
0.99955	0.99967	0.99973	0.99980	0.99992	0.99998	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99955	0.99967	0.99973	0.99980	0.99992	0.99998	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.990000	-2.326300	100.000000	10
THRUST (FN)	0.990000	-2.575800	2.575800	10
MIXTURE RATIO (RM)	0.990000	-2.575800	2.575800	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.970299 OVERALL RELIABILITY 0.969329

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.99999	0.88092	0.96914	1.00000	1.00000	0.99835	0.95536	0.97496	0.96777	1.00000
0.86974	1.00000	0.96125	0.99811	0.99999	1.00000	0.99278	0.99924	0.95840	1.00000
0.86758	0.88092	0.89518	0.90606	0.91042	0.91587	0.92226	0.92552	0.92730	0.93040
1.00000	1.00000	0.94601	1.00000	0.99931	0.99602	0.96210	0.99833	0.99600	1.00000
0.93493	1.00000	0.99590	0.96380	0.98801	0.96679	0.98399	0.99053	0.99796	0.96674
0.93371	0.93634	0.93888	0.93987	0.94186	0.94427	0.94669	0.94831	0.95045	0.95250
1.00000	0.99956	0.99795	0.99999	1.00000	0.98785	0.96159	0.98622	0.99974	0.97170
0.95388	0.97756	0.95793	0.99365	0.97779	1.00000	0.99954	0.98152	0.99294	1.00000
0.95386	0.95546	0.95597	0.95734	0.95887	0.96012	0.96115	0.96273	0.96355	0.96443
1.00000	0.97380	1.00000	1.00000	0.96969	1.00000	0.99999	1.00000	1.00000	0.99703
0.97389	0.99413	0.99899	0.97342	0.99992	0.97466	1.00000	1.00000	0.98798	0.97737
0.96568	0.96654	0.96716	0.96843	0.96960	0.97084	0.97188	0.97298	0.97373	0.97446
1.00000	0.99962	0.99530	0.99552	0.99314	0.99784	0.99911	0.98371	0.98018	0.98610
0.99920	1.00000	0.99850	0.99552	0.99995	0.97996	1.00000	0.99671	1.00000	0.99648
0.97505	0.97552	0.97618	0.97655	0.97695	0.97785	0.97853	0.97945	0.98018	0.98099
0.98205	0.98308	0.99896	0.99494	1.00000	0.99998	0.98584	1.00000	1.00000	0.98851
0.99989	1.00000	1.00000	0.99071	0.98485	0.98630	1.00000	0.98832	1.00000	0.99979
0.98179	0.98308	0.98365	0.98453	0.98485	0.98538	0.98584	0.98672	0.98723	0.98798
0.99579	0.99655	0.99612	0.99752	0.99382	0.99941	0.99693	1.00000	1.00000	0.99449
1.00000	1.00000	0.99883	0.99514	0.99999	0.99189	0.99517	1.00000	1.00000	1.00000
0.98832	0.98882	0.98931	0.99004	0.99065	0.99131	0.99176	0.99216	0.99259	0.99298
0.99681	1.00000	0.99438	0.99463	0.99998	0.99994	1.00000	0.99610	0.99999	0.99704
1.00000	0.99377	0.99974	1.00000	0.99501	0.99552	1.00000	1.00000	0.99693	0.99973
0.99344	0.99377	0.99413	0.99463	0.99499	0.99546	0.99576	0.99610	0.99639	0.99677
0.99699	1.00000	0.99824	0.99828	1.00000	0.99977	0.99990	0.99995	0.99999	1.00000
1.00000	0.99754	1.00000	0.99996	0.99847	0.99939	0.99950	0.99910	0.99924	0.99931
0.99699	0.99754	0.99792	0.99818	0.99841	0.99865	0.99876	0.99904	0.99923	0.99931
0.99988	0.99967	1.00000	1.00000	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	0.99977	0.99989	0.99995	1.00000	1.00000	1.00000	1.00000	1.00000
0.99949	0.99966	0.99977	0.99989	0.99995	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00106 AVERAGE = 0.97064 EQUIVALENT BINOMIAL VARIANCE = 0.00297 EFFICIENCY = 0.35669

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.85843	0.87118	0.88193	0.89607	0.90441	0.90964	0.91540	0.92127	0.92496	0.92680
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.85843	0.87118	0.88193	0.89607	0.90441	0.90964	0.91540	0.92127	0.92496	0.92680
0.92919	0.93320	0.93631	0.93863	0.93987	0.94186	0.94427	0.94678	0.94845	0.95088
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.92919	0.93320	0.93631	0.93863	0.93987	0.94186	0.94427	0.94678	0.94845	0.95088
0.95276	0.95450	0.95554	0.95654	0.95771	0.95907	0.96027	0.96122	0.96294	0.96373
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.95276	0.95450	0.95554	0.95654	0.95771	0.95907	0.96027	0.96122	0.96294	0.96373
0.96489	0.96584	0.96691	0.96753	0.96868	0.97019	0.97122	0.97225	0.97324	0.97402
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96489	0.96584	0.96691	0.96753	0.96868	0.97019	0.97122	0.97225	0.97324	0.97402
0.97454	0.97526	0.97577	0.97638	0.97663	0.97719	0.97809	0.97889	0.97988	0.98047
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97454	0.97526	0.97577	0.97638	0.97663	0.97719	0.97809	0.97889	0.97988	0.98047
0.98124	0.98236	0.98326	0.98393	0.98470	0.98504	0.98564	0.98659	0.98695	0.98749
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98124	0.98236	0.98326	0.98393	0.98470	0.98504	0.98564	0.98659	0.98695	0.98749
0.98821	0.98858	0.98899	0.98971	0.99030	0.99103	0.99152	0.99191	0.99244	0.99273
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.98821	0.98858	0.98899	0.98971	0.99030	0.99103	0.99152	0.99191	0.99244	0.99273
0.99315	0.99369	0.99398	0.99423	0.99489	0.99526	0.99566	0.99599	0.99626	0.99673
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99315	0.99369	0.99398	0.99423	0.99489	0.99526	0.99566	0.99599	0.99626	0.99673
0.99696	0.99744	0.99785	0.99813	0.99834	0.99855	0.99869	0.99900	0.99922	0.99929
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99696	0.99744	0.99785	0.99813	0.99834	0.99855	0.99869	0.99900	0.99922	0.99929
0.99947	0.99965	0.99977	0.99989	0.99995	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99947	0.99965	0.99977	0.99989	0.99995	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.897303

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN) SECOND LINE - R(RM) THIRD LINE - R(ISP)R(FN)R(RM)

1.00000	0.99999	0.98071	1.00000	0.99836	1.00000	0.98603	0.98759	0.98947	0.99774
0.96918	0.99792	0.99781	0.98069	0.98440	1.00000	0.99998	1.00000	0.99926	1.00000
0.96268	0.97316	0.97856	0.98069	0.98279	0.98476	0.98601	0.98759	0.98874	0.98963
0.99084	0.99295	1.00000	1.00000	1.00000	1.00000	0.99396	0.99476	0.99502	0.99531
1.00000	1.00000	1.00000	1.00000	0.99286	0.99338	1.00000	0.99980	0.99992	1.00000
0.99068	0.99147	0.99201	0.99227	0.99286	0.99338	0.99396	0.99456	0.99495	0.99531
1.00000	0.99615	0.99665	1.00000	1.00000	1.00000	0.99999	0.99794	0.99803	1.00000
0.99573	1.00000	1.00000	0.99699	1.00000	0.99830	1.00000	0.99988	1.00000	0.99814
0.99573	0.99615	0.99661	0.99699	0.99721	0.99734	0.99763	0.99782	0.99803	0.99814
1.00000	1.00000	1.00000	1.00000	1.00000	0.99904	1.00000	0.99922	1.00000	0.99940
1.00000	0.99855	1.00000	0.99886	0.99984	1.00000	0.99911	1.00000	0.99932	1.00000
0.99837	0.99855	0.99870	0.99886	0.99897	0.99904	0.99911	0.99922	0.99932	0.99940
0.99951	0.99959	1.00000	1.00000	1.00000	0.99998	1.00000	0.99980	0.99995	0.99987
1.00000	1.00000	1.00000	1.00000	0.99971	0.99977	0.99978	1.00000	0.99989	1.00000
0.99951	0.99959	0.99964	0.99969	0.99971	0.99975	0.99978	0.99980	0.99984	0.99987
1.00000	0.99992	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	0.99992	1.00000	0.99995	0.99996	1.00000	0.99998	1.00000	0.99999
0.99990	0.99991	0.99992	0.99994	0.99995	0.99996	0.99997	0.99998	0.99998	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00906 AVERAGE = 0.89742 EQUIVALENT BINOMIAL VARIANCE = 0.00922 EFFICIENCY = 0.98301

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.99979	0.98557	0.99301	0.99893	0.99993	1.00000	0.96925	0.98951	0.99353	0.99758
0.60000	0.70000	0.70000	0.70000	0.70000	0.70000	0.80000	0.80000	0.80000	0.80000
0.59988	0.68990	0.69511	0.69925	0.69995	0.70000	0.77540	0.79161	0.79482	0.79806
0.99818	0.99900	0.99932	0.99965	0.99977	0.99992	0.99997	1.00000	1.00000	1.00000
0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000
0.79854	0.79920	0.79946	0.79972	0.79982	0.79994	0.79998	0.80000	0.80000	0.80000
1.00000	1.00000	1.00000	1.00000	1.00000	0.96202	0.97998	0.98444	0.98732	0.98966
0.80000	0.80000	0.80000	0.80000	0.80000	0.90000	0.90000	0.90000	0.90000	0.90000
0.80000	0.80000	0.80000	0.80000	0.80000	0.86582	0.88198	0.88600	0.88859	0.89070
0.99199	0.99329	0.99475	0.99573	0.99650	0.99721	0.99765	0.99835	0.99878	0.99904
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.89279	0.89396	0.89527	0.89615	0.89685	0.89749	0.89788	0.89852	0.89890	0.89913
0.99921	0.99950	0.99962	0.99970	0.99983	0.99990	0.99994	0.99997	0.99998	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.89929	0.89955	0.89966	0.89973	0.89984	0.89991	0.89994	0.89997	0.89998	0.90000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
1.00000	1.00000	1.00000	1.00000	1.00000	0.96802	0.98069	0.98601	0.98862	0.99199
0.90000	0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.96802	0.98069	0.98601	0.98862	0.99199
0.99334	0.99457	0.99568	0.99694	0.99747	0.99798	0.99863	0.99897	0.99935	0.99964
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99334	0.99457	0.99568	0.99694	0.99747	0.99798	0.99863	0.99897	0.99935	0.99964
0.99975	0.99981	0.99989	0.99993	0.99996	0.99998	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99975	0.99981	0.99989	0.99993	0.99996	0.99998	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.900000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.897303

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN) SECOND LINE - R(RM) THIRD LINE - R(ISP)R(FN)R(RM)

0.96636	0.97721	0.98496	1.00000	1.00000	1.00000	0.99990	1.00000	1.00000	0.99172
1.00000	0.99820	0.99477	0.99997	1.00000	1.00000	0.99885	1.00000	1.00000	1.00000
0.96636	0.97443	0.97981	0.98339	0.98488	0.98637	0.98821	0.99003	0.99082	0.99172
1.00000	0.99435	0.99355	0.99646	1.00000	0.99953	1.00000	1.00000	1.00000	0.99976
0.99807	0.99937	1.00000	1.00000	1.00000	1.00000	0.99531	1.00000	0.99636	1.00000
0.99231	0.99275	0.99355	0.99413	0.99448	0.99493	0.99531	0.99578	0.99633	0.99684
0.99919	1.00000	0.99752	1.00000	1.00000	1.00000	0.99838	1.00000	1.00000	0.99871
0.99791	0.99727	1.00000	0.99767	0.99780	0.99819	1.00000	0.99845	0.99860	1.00000
0.99710	0.99727	0.99752	0.99767	0.99780	0.99819	0.99838	0.99844	0.99860	0.99871
1.00000	0.99936	1.00000	0.99909	1.00000	1.00000	0.99951	1.00000	0.99948	0.99954
0.99881	1.00000	1.00000	1.00000	1.00000	0.99924	0.99983	0.99941	1.00000	1.00000
0.99881	0.99890	0.99902	0.99909	0.99916	0.99924	0.99933	0.99941	0.99948	0.99954
0.99961	0.99968	0.99968	0.99971	0.99978	1.00000	0.99982	1.00000	0.99988	1.00000
1.00000	0.99995	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99961	0.99963	0.99968	0.99971	0.99978	0.99980	0.99982	0.99985	0.99988	0.99990
0.99992	1.00000	1.00000	1.00000	0.99996	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	0.99993	0.99994	0.99995	1.00000	1.00000	0.99998	1.00000	0.99999	0.99999
0.99992	0.99993	0.99994	0.99995	0.99996	0.99997	0.99998	0.99998	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00846 AVERAGE = 0.90130 EQUIVALENT BINOMIAL VARIANCE = 0.00922 EFFICIENCY = 0.91784

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.99995	0.99491	0.99929	0.99996	1.00000	1.00000	0.97868	0.99260	0.99609	0.99741
0.60000	0.70000	0.70000	0.70000	0.70000	0.70000	0.80000	0.80000	0.80000	0.80000
0.59997	0.69644	0.69950	0.69997	0.70000	0.70000	0.78295	0.79408	0.79688	0.79793
0.99868	0.99940	0.99961	0.99986	0.99996	0.99999	1.00000	1.00000	1.00000	1.00000
0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000	0.80000
0.79895	0.79952	0.79969	0.79989	0.79997	0.79999	0.80000	0.80000	0.80000	0.80000
1.00000	1.00000	1.00000	0.97565	0.98373	0.98648	0.99082	0.99223	0.99319	0.99420
0.80000	0.80000	0.80000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.80000	0.80000	0.80000	0.87809	0.88536	0.88783	0.89174	0.89301	0.89387	0.89478
0.99531	0.99658	0.99740	0.99781	0.99841	0.99871	0.99888	0.99909	0.99926	0.99951
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.89578	0.89692	0.89766	0.89803	0.89857	0.89884	0.89899	0.89918	0.89933	0.89956
0.99969	0.99979	0.99984	0.99990	0.99993	0.99995	0.99998	0.99999	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.89972	0.89981	0.89986	0.89991	0.89994	0.89996	0.89999	0.89999	0.90000	0.90000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
1.00000	1.00000	1.00000	1.00000	0.94363	0.97451	0.98509	0.98888	0.99201	0.99355
0.90000	0.90000	0.90000	0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.94363	0.97451	0.98509	0.98888	0.99201	0.99355
0.99526	0.99689	0.99736	0.99784	0.99855	0.99882	0.99905	0.99927	0.99942	0.99961
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99526	0.99689	0.99736	0.99784	0.99855	0.99882	0.99905	0.99927	0.99942	0.99961
0.99968	0.99978	0.99989	0.99993	0.99996	0.99997	0.99999	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99968	0.99978	0.99989	0.99993	0.99996	0.99997	0.99999	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13,1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.987033

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN) SECOND LINE - R(RM) THIRD LINE - R(ISP)R(FN)R(RM)

1.00000	0.97838	1.00000	1.00000	0.99857	1.00000	1.00000	0.99234	1.00000	1.00000
1.00000	1.00000	1.00000	0.98317	1.00000	0.99991	0.98778	0.99661	1.00000	1.00000
0.97025	0.97838	0.98090	0.98317	0.98534	0.98677	0.98778	0.98898	0.99027	0.99078
1.00000	1.00000	1.00000	0.99987	1.00000	1.00000	0.99633	1.00000	1.00000	0.99797
1.00000	0.99237	1.00000	0.99797	1.00000	0.99807	0.99886	0.99945	0.99601	0.99934
0.99186	0.99237	0.99287	0.99371	0.99430	0.99471	0.99520	0.99558	0.99601	0.99620
0.99659	0.99687	0.99699	1.00000	1.00000	0.99783	0.99793	0.99978	0.99827	0.99848
0.99992	1.00000	1.00000	0.99732	0.99760	1.00000	1.00000	0.99828	1.00000	1.00000
0.99651	0.99687	0.99699	0.99732	0.99760	0.99783	0.99793	0.99806	0.99826	0.99845
0.99859	0.99871	1.00000	1.00000	1.00000	0.99914	0.99923	1.00000	0.99940	0.99967
1.00000	1.00000	1.00000	0.99895	1.00000	1.00000	1.00000	1.00000	1.00000	0.99997
0.99859	0.99871	0.99887	0.99895	0.99906	0.99914	0.99923	0.99932	0.99940	0.99946
1.00000	0.99974	1.00000	0.99980	0.99967	1.00000	1.00000	0.99978	1.00000	0.99985
0.99949	0.99980	0.99963	1.00000	1.00000	0.99998	1.00000	1.00000	0.99980	1.00000
0.99949	0.99954	0.99960	0.99964	0.99967	0.99973	0.99976	0.99978	0.99980	0.99985
0.99987	0.99990	0.99991	1.00000	1.00000	1.00000	0.99997	0.99998	0.99999	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99999
0.99987	0.99990	0.99991	0.99993	0.99994	0.99996	0.99997	0.99998	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00108 AVERAGE = 0.98733 EQUIVALENT BINOMIAL VARIANCE = 0.00128 EFFICIENCY = 0.84299

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.98036	0.99320	0.99771	0.99949	0.99999	1.00000	1.00000	1.00000	1.00000	0.96775
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	1.00000
0.88232	0.89388	0.89794	0.89954	0.89999	0.90000	0.90000	0.90000	0.90000	0.96775
0.97838	0.98111	0.98356	0.98583	0.98753	0.98866	0.99003	0.99078	0.99186	0.99237
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.97838	0.98111	0.98356	0.98583	0.98753	0.98866	0.99003	0.99078	0.99186	0.99237
0.99287	0.99383	0.99443	0.99489	0.99537	0.99586	0.99612	0.99633	0.99678	0.99696
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99287	0.99383	0.99443	0.99489	0.99537	0.99586	0.99612	0.99633	0.99678	0.99696
0.99734	0.99762	0.99787	0.99797	0.99811	0.99827	0.99848	0.99867	0.99883	0.99894
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99734	0.99762	0.99787	0.99797	0.99811	0.99827	0.99848	0.99867	0.99883	0.99894
0.99904	0.99915	0.99924	0.99932	0.99940	0.99946	0.99951	0.99957	0.99962	0.99965
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99904	0.99915	0.99924	0.99932	0.99940	0.99946	0.99951	0.99957	0.99962	0.99965
0.99970	0.99974	0.99977	0.99980	0.99985	0.99987	0.99990	0.99991	0.99993	0.99995
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99970	0.99974	0.99977	0.99980	0.99985	0.99987	0.99990	0.99991	0.99993	0.99995
0.99996	0.99997	0.99998	0.99999	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99996	0.99997	0.99998	0.99999	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.990000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.987033

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
1.00000	0.99931	0.99954	1.00000	1.00000	0.98865	0.99031	1.00000	0.99150	0.99432
0.99996	0.99882	0.98279	0.98489	0.98702	1.00000	0.99969	1.00000	1.00000	0.99789
0.97157	0.97768	0.98234	0.98489	0.98702	0.98865	0.99001	0.99074	0.99150	0.99223
1.00000	1.00000	1.00000	0.99473	0.99523	1.00000	0.99605	0.99996	0.99678	0.99713
0.99994	1.00000	1.00000	1.00000	1.00000	0.99568	1.00000	0.99951	1.00000	1.00000
0.99284	0.99368	0.99420	0.99473	0.99523	0.99568	0.99605	0.99652	0.99677	0.99713
1.00000	1.00000	1.00000	0.99909	1.00000	0.99813	0.99823	1.00000	0.99938	1.00000
1.00000	0.99769	0.99773	1.00000	0.99801	1.00000	1.00000	1.00000	0.99952	0.99945
0.99746	0.99766	0.99773	0.99786	0.99801	0.99813	0.99823	0.99841	0.99859	0.99875
1.00000	0.99902	1.00000	1.00000	1.00000	0.99937	1.00000	1.00000	1.00000	1.00000
0.99891	1.00000	1.00000	0.99920	1.00000	1.00000	1.00000	1.00000	0.99960	0.99962
0.99891	0.99902	0.99907	0.99920	0.99931	0.99937	0.99944	0.99950	0.99960	0.99962
1.00000	0.99987	1.00000	0.99980	1.00000	1.00000	0.99995	1.00000	1.00000	1.00000
0.99966	0.99985	0.99977	1.00000	1.00000	0.99984	0.99992	1.00000	0.99990	0.99992
0.99966	0.99973	0.99977	0.99980	0.99982	0.99984	0.99987	0.99988	0.99990	0.99992
1.00000	0.99994	1.00000	1.00000	1.00000	1.00000	0.99999	1.00000	0.99999	1.00000
0.99992	1.00000	0.99995	0.99996	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99992	0.99994	0.99995	0.99996	0.99997	0.99998	0.99999	0.99999	0.99999	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00103 AVERAGE = 0.98702 EQUIVALENT BINOMIAL VARIANCE = 0.00128 EFFICIENCY = 0.80432

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
0.99245	0.99572	0.99812	0.99925	0.99988	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000	0.90000
0.89320	0.89615	0.89831	0.89933	0.89989	0.90000	0.90000	0.90000	0.90000	0.90000
0.96781	0.97744	0.98234	0.98489	0.98702	0.98886	0.99005	0.99092	0.99152	0.99266
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.96781	0.97744	0.98234	0.98489	0.98702	0.98886	0.99005	0.99092	0.99152	0.99266
0.99329	0.99416	0.99473	0.99535	0.99581	0.99650	0.99673	0.99711	0.99751	0.99766
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99329	0.99416	0.99473	0.99535	0.99581	0.99650	0.99673	0.99711	0.99751	0.99766
0.99775	0.99790	0.99803	0.99818	0.99831	0.99850	0.99873	0.99890	0.99903	0.99912
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99775	0.99790	0.99803	0.99818	0.99831	0.99850	0.99873	0.99890	0.99903	0.99912
0.99921	0.99933	0.99941	0.99948	0.99956	0.99962	0.99967	0.99975	0.99978	0.99980
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99921	0.99933	0.99941	0.99948	0.99956	0.99962	0.99967	0.99975	0.99978	0.99980
0.99982	0.99985	0.99987	0.99989	0.99991	0.99992	0.99993	0.99995	0.99996	0.99997
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99982	0.99985	0.99987	0.99989	0.99991	0.99992	0.99993	0.99995	0.99996	0.99997
0.99998	0.99999	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99998	0.99999	0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.996006

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN) SECOND LINE - R(RM) THIRD LINE - R(ISP)R(FN)R(RM)

0.96727	1.00000	0.98679	1.00000	1.00000	0.99822	0.99183	0.99132	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99299
0.96727	0.97654	0.98338	0.98570	0.98715	0.98820	0.98978	0.99126	0.99202	0.99299
0.99399	1.00000	0.99499	1.00000	1.00000	1.00000	0.99844	0.99923	0.99708	1.00000
1.00000	0.99437	1.00000	0.99548	1.00000	1.00000	0.99799	0.99745	1.00000	0.99796
0.99332	0.99437	0.99499	0.99548	0.99584	0.99614	0.99643	0.99668	0.99690	0.99707
0.99735	0.99983	1.00000	1.00000	1.00000	0.99859	0.99851	1.00000	1.00000	0.99890
1.00000	0.99890	0.99775	1.00000	1.00000	0.99981	1.00000	0.99865	1.00000	1.00000
0.99735	0.99760	0.99775	0.99800	0.99822	0.99840	0.99851	0.99865	0.99874	0.99882
1.00000	1.00000	1.00000	1.00000	0.99926	0.99967	1.00000	1.00000	0.99992	0.99960
0.99891	0.99904	0.99910	0.99976	1.00000	0.99996	0.99942	0.99948	0.99965	1.00000
0.99891	0.99899	0.99910	0.99918	0.99926	0.99936	0.99942	0.99948	0.99957	0.99960
0.99965	0.99974	1.00000	0.99999	1.00000	0.99980	0.99983	1.00000	1.00000	0.99996
1.00000	0.99995	0.99974	1.00000	0.99979	1.00000	1.00000	1.00000	1.00000	1.00000
0.99965	0.99969	0.99974	0.99977	0.99979	0.99980	0.99983	0.99985	0.99987	0.99990
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99991	0.99993	0.99995	0.99996	1.00000	1.00000	0.99998	1.00000	0.99999	1.00000
0.99991	0.99993	0.99995	0.99996	0.99997	0.99998	0.99998	0.99999	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00016 AVERAGE = 0.99632 EQUIVALENT BINOMIAL VARIANCE = 0.00040 EFFICIENCY = 0.39938

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
1.00000	0.96435	0.97374	0.98222	0.98514	0.98687	0.98785	0.98937	0.99072	0.99173
0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.96435	0.97374	0.98222	0.98514	0.98687	0.98785	0.98937	0.99072	0.99173
0.99256	0.99320	0.99406	0.99484	0.99532	0.99579	0.99609	0.99639	0.99666	0.99683
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99256	0.99320	0.99406	0.99484	0.99532	0.99579	0.99609	0.99639	0.99666	0.99683
0.99705	0.99728	0.99757	0.99772	0.99795	0.99815	0.99839	0.99847	0.99863	0.99873
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99705	0.99728	0.99757	0.99772	0.99795	0.99815	0.99839	0.99847	0.99863	0.99873
0.99882	0.99890	0.99899	0.99910	0.99918	0.99926	0.99936	0.99942	0.99948	0.99957
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99882	0.99890	0.99899	0.99910	0.99918	0.99926	0.99936	0.99942	0.99948	0.99957
0.99960	0.99965	0.99970	0.99974	0.99977	0.99979	0.99981	0.99983	0.99985	0.99988
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99960	0.99965	0.99970	0.99974	0.99977	0.99979	0.99981	0.99983	0.99985	0.99988
0.99990	0.99991	0.99993	0.99995	0.99996	0.99997	0.99998	0.99999	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99990	0.99991	0.99993	0.99995	0.99996	0.99997	0.99998	0.99999	0.99999	0.99999
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99999	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

STANDARD NORMAL PERFORMANCE VARIABLES MEAN ZERO VARIANCE ONE

PERFORMANCE VARIABLE	TRUE RELIABILITY	LOWER LIMIT	UPPER LIMIT	SAMPLE SIZE
SPECIFIC IMPULSE (ISP)	0.999000	-3.090200	100.000000	10
THRUST (FN)	0.999000	-3.290500	3.290500	10
MIXTURE RATIO (RM)	0.999000	-3.290500	3.290500	10
FUNCTIONAL RELIABILITY R(FU)	0.999000		(BINOMIAL)	10

PRODUCT OF PERFORMANCE RELIABILITIES 0.997003 OVERALL RELIABILITY 0.996006

NUMBER OF SIMULATION TRIALS 1000

THE RESULTS OF EVERY TENTH TRIAL ARE PRINTED IN TABLE ONE AND TABLE TWO.

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE ONE - RANKED PERFORMANCE RELIABILITIES

FIRST LINE - R(FN)			SECOND LINE - R(RM)			THIRD LINE - R(ISP)R(FN)R(RM)			
0.96765	0.99185	1.00000	0.98346	1.00000	0.98847	1.00000	0.99018	0.99901	1.00000
1.00000	1.00000	0.97954	1.00000	1.00000	1.00000	0.98937	1.00000	1.00000	1.00000
0.96765	0.97511	0.97954	0.98346	0.98597	0.98847	0.98937	0.99018	0.99118	0.99242
1.00000	1.00000	0.99403	0.99858	0.99502	1.00000	1.00000	0.99594	1.00000	1.00000
1.00000	0.99993	1.00000	0.99577	0.99989	0.99523	0.99689	1.00000	1.00000	1.00000
0.99304	0.99348	0.99403	0.99436	0.99491	0.99523	0.99554	0.99594	0.99636	0.99664
1.00000	0.99893	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	0.99875
0.99699	0.99833	1.00000	0.99764	0.99784	0.99807	0.99825	0.99840	1.00000	1.00000
0.99699	0.99726	0.99743	0.99764	0.99784	0.99807	0.99825	0.99838	0.99859	0.99874
0.99990	0.99962	0.99907	1.00000	0.99937	1.00000	0.99935	0.99940	1.00000	1.00000
0.99899	1.00000	1.00000	1.00000	0.99986	1.00000	1.00000	1.00000	0.99946	1.00000
0.99889	0.99897	0.99907	0.99914	0.99924	0.99929	0.99935	0.99940	0.99946	0.99951
0.99969	0.99962	1.00000	0.99971	0.99974	0.99977	1.00000	1.00000	0.99992	1.00000
1.00000	1.00000	0.99965	1.00000	1.00000	1.00000	0.99979	1.00000	0.99992	0.99991
0.99958	0.99962	0.99965	0.99971	0.99974	0.99977	0.99979	0.99981	0.99984	0.99987
1.00000	1.00000	1.00000	1.00000	0.99996	1.00000	0.99998	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	0.99996	1.00000	0.99999	0.99999	1.00000
0.99990	0.99991	0.99993	0.99994	0.99996	0.99996	0.99998	0.99999	0.99999	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.1A BINOMIAL TRINORMAL SIMULATION

TABLE TWO - RANKED OVERALL RELIABILITY

VARIANCE = 0.00018 AVERAGE = 0.99602 EQUIVALENT BINOMIAL VARIANCE = 0.00040 EFFICIENCY = 0.45168

FIRST LINE - R(ISP)R(FN)R(RM)			SECOND LINE - R(FU)			THIRD LINE - R(ISP)R(FN)R(RM)R(FU)			
1.00000	0.96594	0.97282	0.97884	0.98315	0.98575	0.98772	0.98897	0.99006	0.99097
0.90000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.90000	0.96594	0.97282	0.97884	0.98315	0.98575	0.98772	0.98897	0.99006	0.99097
0.99225	0.99301	0.99344	0.99400	0.99436	0.99491	0.99523	0.99555	0.99596	0.99638
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99225	0.99301	0.99344	0.99400	0.99436	0.99491	0.99523	0.99555	0.99596	0.99638
0.99670	0.99705	0.99728	0.99749	0.99772	0.99793	0.99811	0.99826	0.99843	0.99861
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99670	0.99705	0.99728	0.99749	0.99772	0.99793	0.99811	0.99826	0.99843	0.99861
0.99876	0.99890	0.99900	0.99912	0.99916	0.99925	0.99930	0.99937	0.99943	0.99947
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99876	0.99890	0.99900	0.99912	0.99916	0.99925	0.99930	0.99937	0.99943	0.99947
0.99954	0.99960	0.99963	0.99968	0.99972	0.99975	0.99978	0.99980	0.99982	0.99985
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99954	0.99960	0.99963	0.99968	0.99972	0.99975	0.99978	0.99980	0.99982	0.99985
0.99988	0.99990	0.99992	0.99993	0.99995	0.99996	0.99997	0.99998	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
0.99988	0.99990	0.99992	0.99993	0.99995	0.99996	0.99997	0.99998	0.99999	0.99999
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

PROGRAM 13.2

OVERALL RELIABILITY CONFIDENCE BOUND

(FORTRAN IV)

```
C      OVERALL RELIABILITY CONFIDENCE BOUND                                  RBA00010
C      READ INPUT                                                            RBA00020
       DIMENSION A(81),      V(17),IT(11),C(18),D(3,19),FR(4,17),            RBA00030
      1OBSR(3),OBSK(3),Z(3),CONR(3),R(1001),G(501),H(501),S(1001),           RBA00040
      2T(1001),PCT(4,17),ZP(3,19),RHO(5,25),CANSWR(8),ERMAX(2),              RBA00050
      3E(17),DF(3),SMPSIZ(3), DCPY(3,19),PERCEN(19),B(3,81)                  RBA00060
       COMMON XX(5),YY(4),U(9,21),UU(5,21,9),PAST                            RBA00070
       READ(5,1)U,  V                                                        RBA00080
     1 FORMAT (6F10.4)
       PAST=4.
       DO 420 I=1,9
       DO 420 J=1,21
       UU(5,J,I)=U(I,J)
       READ(5,422) YY
   422 FORMAT(4F10.4)
       DO 423 K=1,4
       L=5-K
   423 UU(L,J,I)=YY(K)
   420 CONTINUE
C      SET INITIAL CONDITIONS
       DO 410 I=1,17
  410  E(I)=1.0-V(I)
       DO 400 N=2,18
  400  PERCEN(N)=100.0*V(N-1)
       C(1)=.005                                                             RBA014
       C(18)=.005                                                            RBA015
       DO 3  I=2,17                                                          RBA016
     3 C(I)=V(I)-V(I-1)                                                      RBA017
       CNST=0.90
       A(1)=0.                                                               RBA  018
       A(2)=.1                                                               RBA  019
       A(3)=.2                                                               RB0020
       A(4)=.3                                                               RB0021
       DO4 I=5,81                                                            RBA  022
     4 A(I)=A(I-1)+.05                                                       RBA  023
   401 READ(5,2)FAILS,TESTS,OBSR,OBSK,SMPSIZ
     2 FORMAT(6F10.4)                                                        RBA  008
       IF(FAILS)104,402,402
   402 JCONF=14
       IF (B(3,1)-0.5) 810,820,810
  810  DO 800 I=1,3
       IF (I-1) 801,801,802
  802  IF (SMPSIZ(I)-SMPSIZ(I-1)) 801,803,801
  803  DO 804 J=1,81
  804  B(I,J)=B(I-1,J)
```

```
      GO TO 800
  801 READ(5,1) (B(I,J),J=1,81)
      DO 830 J=1,81
  830 B(I,J)=0.01*B(I,J)
  800 CONTINUE
  820 CONTINUE
      DO 421 I=1,3
  421 DF(I)=SMPSIZ(I)-1.0
      OBSRF=1.-FAILS/TESTS                                          RBA  012
      ROVALL=OBSRF*OBSR(1)*OBSR(2)*OBSR(3)                          RBA5240
      JTESTS=TESTS                                                  RBA026
      ITESTS=JTESTS+1
      DO 61 I=1,ITESTS
      ABC=I-1
   61 H(I)=ABC/TESTS
      DO50I=1,1001                                                  RBA030
      ABC=I-1                                                       RBA0031
   50 T(I)=.001*ABC                                                 RBA0032
      INEG=0.0                                                      RBA033
      DO 120 I=1,3
      DO 120 J=1,19
  120 ZP(I,J)=0.0
      DO 77I=1,4                                                    RBA0391
      DO 77J=1,17                                                   RBA0392
      PCT(I,J)=0.0
      RHO(I,J)=0.0
      RHO(I+1,J)=0.0
   77 FR(I,J)=0.0
C     DETERMINE RFUNCTIONAL CONFIDENCE BOUND                        RBA038
    6 JCONF=JCONF-1                                                 RBA039
      CMPLMT=1.-V(JCONF)                                            RBA041
      WRITE(6,500)
  500 FORMAT(1H1 36X 53HPROGRAM 13.2  OVERALL  RELIABILITY  CONFIDENCE
     1BOUND///)
      WRITE(6,510)
  510 FORMAT(1HO 37X 51H*****  PERFORMANCE RELIABILITY DISTRIBUTIONS  **
     1*** ///)
      WRITE(6,505)          CMPLMT
  505 FORMAT(1HO 32X                                  4HA = 50HPROBABILITY
     1OF H GREATER THAN OBSERVED GIVEN ETA =,F7.4///)
      X1=0.                                                         RBA042
      X2=0.                                                            043
      RFC=OBSRF                                                        044
    7 IF(CMPLMT-BINOML(1.,RFC,TESTS,FAILS))8,13,9                   RBA
    8 X1=RFC                                                           047
```

```
      GO TO 10                                                          RBA048
    9 X2=RFC                                                            RBA049
   10 IF(X1*X2)12,11,12                                                 RBA050
   11 RFC=RFC-.01                                                          520
      GO TO 7                                                           RBA530
   12 RFC=.5*(X1+X2)                                                    RBA540
      IF(ABS(RFC-X1)-1.E-4)13,13,7                                         550
   13 CONTINUE
C     DETERMINE Z(1),Z(2),Z(3)                                             570
      DO 20 I=1,3
      X1=0.                                                             RBA590
      X2=0.                                                             RBA600
      ABIT=-1.0
      Z(I)=OBSK(I)+2.0                                                     610
   14 IF(VALUEK (DF(I),JCONF,Z(I))-OBSK(I)) 15,16,16
   15 X1=Z(I)                                                              640
      GO TO 17
   16 X2=Z(I)                                                              660
   17 IF(X1*X2)19,18,19                                                    670
   18 Z(I)=Z(I)+ABIT
      IF(Z(I))70,14,14
   70 ABIT=1.0
      Z(I)=0.0
      GO TO 14
   19 Z(I)=.5*(X1+X2)                                                   RBA700
      IF(ABS(Z(I)-X1)-1.E-6)20,20,14                                    RBA710
   20 CONTINUE                                                          RBA720
   28 DO 60I=1,3
      CONR(I)=ANORML (Z(I))                                             RBA5060
   60 CONTINUE
      WRITE(6,515)   (OBSK(I),OBSR(I),CONR(I),SMPSIZ(I), I=1,3 )
  515  FORMAT(1HO8X42HSPECIFIC IMPULSE (ISP)        OBSERVED K =,F7.4, 4X
     112HOBSERVED R =,F7.4,4X  9HETA ISP =         ,F9.6,4X 3HN =,F9.3//
     2 9X 11HTHRUST (FN) 19X 12HOBSERVED K =,F7.4,4X 12HOBSERVED R =,F7.
     34,4X  9HETA FN  =          ,F9.6,4X 3HN =,F9.3// 9X 18HMIXTURE RATI
     40 (RM)12X 12HOBSERVED K =,F7.4,4X 12HOBSERVED R =,F7.4,4X
     59HETA RM  =  ,F9.6,4X 3HN =,F9.3///)
C     SAMPLING DISTRIBUTION OF KS                                       RBA4010
      DO21I=1,3                                                         RBA4020
      DO 21J=2,18                                                       RBA4030
   21 D(I,J)=VALUEK(DF(I),(J-1),Z(I))
      DO 161 I=1,3
      DO 161 J=1,19
  161  DCPY(I,J)=D(I,J)
      DO75I=1,3                                                         RBA6001
```

```
      D(I,1)=0.0                                                        RBA6002
   75 D(I,19)=1.0                                                       RBA6003
      DO 42 I=1,3                                                       RBA
      DO42J=2,18                                                        RBA6020
      ABKS= ABS(D(I,J))                                                 RBA6030
      IF(ABKS-A(81))36,36,35                                            RBA6040
   35 BB=0.                                                             RBA6050
      GO TO 40                                                          RBA6060
   36 M=1                                                               RBA6070
   37 IF(A(M+1)-ABKS)38,38,805                                          RBA6080
   38 M=M+1                                                             RBA6090
      IF (B(I,M-1)) 37,35,37
  805 BB=B(I,M)
      IF (B(I,M+1)-B(I,M)) 39,40,39
   39 BB=BB+(ABKS-A(M))*(B(I,M+1)-B(I,M))/(A(M+1)-A(M))
   40 IF(D(I,J))41,42,42                                                RBA6120
   41 BB=1.-BB                                                          RBA6130
   42 D(I,J)=1.-BB                                                      RBA 6140
      WRITE(6,520)
  520 FORMAT(1HO 36X 16HSPECIFIC IMPULSE 17X 6HTHRUST 19X 13HMIXTURE RAT
     1IO// 15X 10HPERCENTILE 14X 1HK 11X 1HR 15X 1HK 11X 1HR 15X 1HK 11X
     21HR//  19X   3HO.0   13X  3(28H-INFINITY    0.00000        ) /)
      WRITE(6,525) ( PERCEN(M),(DCPY(L,M),D(L,M),L=1,3),M=2,18 )
  525 FORMAT(17X,F5.1,5X,F16.5,F12.5,F16.5,F12.5,F16.5,F12.5   )
      WRITE(6,522)
  522 FORMAT(17X 5H100.0   13X  3(28H+INFINITY    1.00000        )  )
C     BINOMIAL SAMPLING DISTRIBUTION                                    RBA4080
      TOSMAL =1.0
      DO 22J=1,ITESTS
      FS=J-1
      I=ITESTS+1-J
      IF(TOSMAL ) 600,600,601
  601 G(I)=BINOML(0.,RFC,TESTS,FS)
      IF(G(I)-1.E-9) 602,602,22
  602 TOSMAL =-1.0
  600 G(I)=0.0
   22 CONTINUE
      ROVCON=RFC*CONR(1)*CONR(2)*CONR(3)                                RBA5250
      RHC(4,JCONF)=RFC                                                  RBA5261
      RHC(5,JCONF)=ROVCON                                               RBA5262
C     INTEGRATE                                                         RBA6160
      DO 78 MM=1,2                                                      RBA6161
      CHECK=0.0                                                         RBA6162
      DO 34 I=1,1001                                                    RBA6163
      S(I)=0.0                                                          RBA6164
```

```
   34 R(I)=0.                                                          RBA6165
      DO 66 I=1,ITESTS
      IF(G(I)-1.E-6)66,66,45
   45 DO 44J=1,18                                                      RBA6190
      DO 44L=1,18                                                      RBA6200
      DO 44 K=1,18                                                     RBA6210
      ESTR=D(1,J)*D(2,K)*D(3,L)*H(I)                                   RBA6220
      PRESTR=C(J)*C(K)*C(L)*G(I)                                       RBA6240
      IF (ESTR-ROVALL)80,79,79                                         RBA6241
   79 CHECK=CHECK+PRESTR                                               RBA6242
      GO TO 81                                                         RBA6243
   80 FR(MM,JCONF)=FR(MM,JCONF)+PRESTR                                 RBA6244
   81 CONTINUE                                                         RBA6245
      M=INT(1000.*ESTR+.5)+1                                           RBA7010
       IF(M-1001)43,43,100                                             RBA7020
   43 R(M)=R(M)+PRESTR                                                 RBA7030
      IF(R(M)-1.)44,101,101                                            RBA7040
   44 CONTINUE                                                         RBA7050
   66 CONTINUE
      M=1                                                              RBA7080
   47 DO 48 I=M,1001                                                   RBA8010
   48 S(I)=0.                                                          RBAB020
      S(1)=R(1)
      N=M+1
      DO49I=N,1001
   49 S(I)=R(I)+S(I-1)                                                 RBA8040
   85 IF(CNST-S(M))83,83,84                                            RBA8043
   84 M=M+1                                                            RBA8044
      GO TO 85                                                         RBA8045
   83 PCT(MM,JCONF)=T(M)                                               RBA8046
      IF(MM-2)90,91,91                                                 RBA8047
   90 DO 92 I=1,3                                                      RBA8048
      DO 92 J=1,18                                                     RBA8049
   92 D(I,J)=D(I,J+1)                                                  RBA8050
   91 CONTINUE                                                         RBA8051
C     PRINT CUMULATIVE DIST OF R OVERALL                               RBA7060
      IF(TESTS-20.)78,499,78
  499 IF (JCONF-10)78,93,78
   93 WRITE(6,580)
  580 FORMAT(1H1 36X 53HPROGRAM 13.2  OVERALL  RELIABILITY  CONFIDENCE
     1BOUND////)
      WRITE(6,51)                                                      RBA8052
   51 FORMAT( 1HO 3(8X 8HROVERALL 2X 8HPROB(RO) 4X 9HCUMPR(RO) ) // )
      WRITE(6,52)(T(I),R(I),S(I),I=1,1001,10)
   52 FORMAT( (4X 3(F12.4,2F12.8,3X) ) )
```

```
 78 CONTINUE                                                          RBA8065
    PCT(3,JCONF)=0.5*(PCT(1,JCONF)+PCT(2,JCONF))                      RBA8083
 86 PCT(4,JCONF)=0.5*(PCT(2,JCONF)-PCT(1,JCONF))                      RBA8084
    FR(3,JCONF)=0.5*(FR(1,JCONF)+FR(2,JCONF))                         RBA8085
    FR(4,JCONF)=0.5*(FR(1,JCONF)-FR(2,JCONF))                         RBA8086
    WRITE(6,526)
526 FORMAT(1H1 36X 53HPROGRAM 13.2  OVERALL  RELIABILITY  CONFIDENCE
   1BOUND / )
    WRITE(6,530)
530 FORMAT(1HO 38X 49H*****  FUNCTIONAL RELIABILITY DISTRIBUTION  ****
   1* //)
    WRITE(6,535) FAILS,TESTS,OBSRF,RFC
535 FORMAT(1HO 13X 19HOBSERVED FAILURES =,F8.4,4X 7HTESTS =,F8.4, 4X
   112HOBSERVED R =,F8.4,5X 16HETA FUNCTIONAL =  ,F9.6 //)
    IF (TESTS.GT.20.0) GO TO 546
    WRITE(6,540)
540 FORMAT(1HO 53X 1HR 12X 7HPROB(R) / )
    WRITE(6,545)  ( H(I),G(I),I=1,ITESTS )
545 FORMAT(53X,F4.2,10X,F8.6)
    GO TO 551
546 WRITE(6,547)
547 FORMAT(1HO 9X 5(16H  R      PROB(R) 7X) )
    WRITE(6,548) (H(I),G(I),I=1,ITESTS)
548 FORMAT( (3X 5(7X,F5.3,3X,F8.6) ) )
    WRITE(6,549)
549 FORMAT(1H1 36X 53HPROGRAM 13.2  OVERALL  RELIABILITY  CONFIDENCE
   1BOUND////)
551 WRITE(6,550)
550 FORMAT(1HO/36X 56H*****  RESULTS - OVERALL RELIABILITY DISTRIBUTIO
   1N  *****//)
    WRITE(6,555) ROVALL,ROVCON
555 FORMAT(1HO 26X 30HOBSERVED OVERALL RELIABILITY =,F12.8,  7X
   113HETA OVERALL =     ,F12.8 // )
    WRITE(6,560)
560 FORMAT(1HO 36X 54HOVERALL RELIABILITY DISTRIBUTION  NINETIETH PERC
   1ENTILE  / )
    WRITE(6,561) (PCT(J,JCONF),J=1,4)
561 FORMAT(1HO 26X 7HLOWER =,F7.4,5X,7HUPPER =,F7.4,5X,6HMEAN =,F7.4,
   15X,11HMAX ERROR =,F7.4  // )
    WRITE(6,565)
565 FORMAT(1HO 44X 37HOBSERVED OVERALL RELIABILITY FRACTILE  /)
    WRITE(6,570) (FR(I,JCONF),I=1,4)
570 FORMAT(1HO 26X 7HLOWER =,F7.4,5X,7HUPPER =,F7.4,5X,6HMEAN =,F7.4,
   15X,11HMAX ERROR =,F7.4  // )
    DO 89 I=1,3                                                       RBA8093
```

```
      RHO(I,JCONF)=CONR(I)                                              RBA8094
   89 ZP(I,JCONF)=Z(I)                                                  RBA8095
C     TEST TO CALCULATE ANOTHER CONFIDENCE LEVEL                        RBA8099
      IF (ROVALL-PCT(3,JCONF))94,95,95                                  RBA8100
   94 INEG=INEG+1                                                       RBA8101
      IF(2-INEG)150,150,95                                              RBA8102
   95 CONTINUE                                                          RBA8103
      IF(ROVCON-ROVALL)65,65,102
   65 IF(JCONF-5)105,105,6                                              RBA8110
  100 WRITE(6,54)                                                       RBA8120
   54 FORMAT( 26H ESTIMATE OF R EXCEEDS ONE)                            RBA8130
      GO TO 104                                                         RBA8140
  101 WRITE(6,55)                                                       RBA8150
   55 FORMAT( 33H PROBABILITY OF ESTR IS TOO LARGE)                     RBA8160
      GO TO 104                                                         RBA8170
  102 WRITE(6,56)                                                       RBA8180
   56 FORMAT ( 50H LOWER CONFIDENCE BOUND EXCEEDS OBSERVED R OVERALL)   RBA8190
      GO TO 105                                                         RBA8200
C     PRINT FACTOR CONFIDENCE LEVEL RESULTS                             RBA8210
  150 CONTINUE
      WRITE(6,575)
  575 FORMAT(1H1 36X 53HPROGRAM 13.2  OVERALL  RELIABILITY  CONFIDENCE
     1BOUND  /)
      WRITE(6,132)
  132 FORMAT(1HO 47X 32H*****  SUMMARY OF RESULTS  *****  // )
   96 WRITE(6,97)(J,E(J),(RHO(I,J),I=1,5),(ZP(I,J),I=1,3),J=JCONF,17)   RBA8220
   97 FORMAT(1HO 7X 110H           A         ETA ISP     ETA  FN     ETA
     1 RM     ETA  FU     ETA  OV     ZP  ISP      ZP FN       ZP RM //
     2(6X,I5,9F12.5) )
      WRITE(6,98)(J,E(J),(FR(I,J),I=1,4),(PCT(I,J),I=1,4),J=JCONF,17)   RBA8250
   98 FORMAT(1HO / 45X 8HFRACTILE 39X 10HPERCENTILE / 8X 112H
     1A          LOWER       UPPER       MEAN      MAX ERROR     LOWER
     2    UPPER       MEAN      MAX ERROR // (6X,I5,9F12.5) )
C     LAGRANGE THIRD ORDER INTERPOLATION FOR FINAL ANSWERS              RBA8270
      III=JCONF-1                                                       RBA8278
      NUTTUT=JCONF+3                                                    RBA8279
C     INTERPOLATE USING FRACTILE OF OBSERVED OVERALL RELIABILITY
      DO 115 M=18,19
      MM=M-17
      DO 110 I=JCONF,NUTTUT                                             RBA8280
      II=I-III
      YY(II)=V(I)                                                       RBA8290
  110 XX(II)=FR(MM,I)
      CANSWR(MM  )=CUBINT(CNST)
      CANSWR(1)=1.0-CANSWR(1)
```

```
      DO 113 J=1,5                                                    RBA8380
      DO 114 K=JCONF,NUTTUT                                           RBA8390
      II=K-III
  114 YY(  II )=RHO(J,K)                                              RBA8400
  113 RHO(J,M )=CUBINT(CNST)
  115 CONTINUE
      CANSWR(3)=(CANSWR(1)+CANSWR(2))/2.0
      CANSWR(4)=(CANSWR(2)-CANSWR(1))/2.0
      DO 118 J=1,5
      RHO(J,20)=(RHO(J,18)+RHO(J,19))/2.0
  118 RHO(J,21)=(RHO(J,18)-RHO(J,19))/2.0
C     INTERPOLATE USING NINETIETH PERCENTILE OF OVERALL RELIABILITY    RBA8541
      DO 116 M=22,23
      MM=M-21
      DO 111 I=JCONF,NUTTUT                                           RBA8542
      II=I-III                                                        RBA8543
      YY(II)=V(I)                                                     RBA85431
  111 XX(II)=PCT( MM   ,I)
      MM=M-17
      CANSWR(MM  )=CUBINT(ROVALL)
      CANSWR(2)=1.0-CANSWR(2)
      DO 133 J=1,5                                                    RBA8546
      DO 134 K=JCONF,NUTTUT                                           RBA8547
      II=K-III                                                        RBA8548
  134 YY(II)=RHO(J,K)                                                 RBA8549
  133 RHO(J,M)=CUBINT(ROVALL)
  116 CONTINUE
      CANSWR(7)=(CANSWR(5)+CANSWR(6))/2.0
      CANSWR(8)=(CANSWR(6)-CANSWR(5))/2.0
      DO 136 J=1,5
      RHO(J,24)=(RHO(J,22)+RHO(J,23))/2.0
  136 RHO(J,25)=(RHO(J,22)-RHO(J,23))/2.0
C     PRINT RESULTS OF INTERPOLATION                                  RBA8568
      WRITE (6,128)                                                   RBA8569
  128 FORMAT(1HO /34X 59H*****  RESULTS OF LAGRANGE THIRD ORDER INTERPOL
     1ATION  ***** / )
      WRITE(6,417)
  417 FORMAT(1HO / 45X 8HFRACTILE 39X 10HPERCENTILE / 8X 112H
     1           LOWER        UPPER        MEAN       MAX ERROR     LOWER
     2    UPPER        MEAN       MAX ERROR // )
      WRITE(6,416)(CANSWR(J),J=1,8)
  416 FORMAT( 19X 1HA 3X 8F12.5)
      WRITE(6,411)(RHO(1,J),J=18,25)
  411 FORMAT(16X7HETA ISP 8F12.5)
      WRITE(6,412)(RHO(2,J),J=18,25)
```

```
412 FORMAT(16X7HETA  FN 8F12.5)
    WRITE(6,413)(RHO(3,J),J=18,25)
413 FORMAT(16X7HETA  RM 8F12.5)
    WRITE(6,414)(RHO(4,J),J=18,25)
414 FORMAT(16X7HETA  FU 8F12.5)
    WRITE(6,415)(RHO(5,J),J=18,25)
415 FORMAT(16X7HETA  OV 8F12.5)
    GO TO 401                                                    RBA
104 CONTINUE                                                     RBA9010
105 STOP                                                         RBA9020
106 END                                                          RBA9030
```

```
      FUNCTION VALUEK (DF,IPCT,ZDEV)                                    RBA9040
      COMMON XX(5),YY(4),U(9,21),UU(5,21,9),PAST
      FDF=12./SQRT(DF)
      IF(FDF-PAST)205,204,205
  205 PAST=FDF
      M=INT(FDF)+1
      FRPART=FDF-AINT(FDF)
      DO 206 I=1,9
      DO206 J=1,21
  206 U(I,J)=UU(M,J,I)+FRPART*(UU(M+1,J,I)-UU(M,J,I))
  204 DELTA=ZDEV*SQRT(1.+DF)
      SMALLR=DELTA/SQRT(2.*DF)                                          RBA9080
      ETA=SMALLR/SQRT(1.+SMALLR**2.)                                    RBA9090
      SIGN=1.                                                           RBA9100
      JTAB=18-IPCT
      IF(9-JTAB)200,201,201
  200 DELTA=-DELTA                                                      RBA9130
      ETA=-ETA                                                          RBA9140
      SIGN=-1.                                                          RBA9150
      JTAB=IPCT                                                         RBA9110
  201 J=1                                                               RBA9170
      STEP=-1.                                                          RBA9180
  202 IF(STEP-ETA)203,207,207                                           RBA9190
  203 J=J+1                                                             RBA9200
      STEP=STEP+.1                                                      RBA9200
      GO TO 202                                                         RBA9220
  207 ALAMBD=U(JTAB, J-1) +(ETA-STEP+.1)*(U(JTAB,J)-U(JTAB,J-1))/.1     RBA9230
      THING=1.-ALAMBD**2/(2.*DF)
      VALUEK=SIGN*(DELTA+ALAMBD*SQRT(THING+SMALLR**2))/THING            RBA10020
      VALUEK=VALUEK/SQRT(1.+DF)
      RETURN                                                            RBA10030
      END                                                               RBA10040
```

```
      FUNCTION ANORML (SND)                                                 RBA
      ASND=ABS(.70710656*SND)                                               RBA
      ET=1./(1.+.3275911*ASND)                                              RBA
      ANORML=1.-(.22583685*ET-.25212867*ET**2.+1.2596951*ET**3.-1.287822RBA
     1*ET**4.+.94064607*ET**5.)*( .5641896*EXP(-ASND*ASND))
      IF(SND )210,211,211                                                   RBA10100
  210 ANORML=1.-ANORML                                                      RBA10110
  211 RETURN                                                                RBA10120
      END                                                                   RBA10130
```

```
      FUNCTION BINOML(CUM,PROB,TRIALS,FS)                              RBA10140
      IF (CUM) 226,226,224
  226 IF(PROB-COPY)224,228,224
  228 IF(FS-TERM-1.)224,229,224
  224 BINOML=PROB**TRIALS
      XLAST=BINOML
      TERM=0.0
  229 COPY=PROB
  220 IF(TERM-FS)221,222,221
  221 TERM=TERM+1.0
      FACTOR=(TRIALS-TERM+1.)*(1.-PROB)/(TERM*PROB)                    RBA10190
      XLAST=XLAST*FACTOR
      BINOML=XLAST+CUM*BINOML
      GO TO 220                                                        RBA10210
   222 RETURN                                                          RBA10220
      END                                                              RBA10230
```

```
      FUNCTION CUBINT(X)                                                RBA10300
C     LAGRANGE THIRD DEGREE INTERPOLATION                               RBA10310
      COMMON XX(5),YY(4)
      DIMENSION E(5,4)                                                  RBA10330
      XX(5)=X                                                           RBA10340
      DO 300 I=1,5                                                      RBA10350
      DO 300 J=1,4                                                      RBA10360
  300 E(I,J)=XX(I)-XX(J)                                                RBA10370
      CUBINT=YY(1)*E(5,2)*E(5,3)*E(5,4)/(E(1,2)*E(1,3)*E(1,4))+         RBA10380
     1       YY(2)*E(5,1)*E(5,3)*E(5,4)/(E(2,1)*E(2,3)*E(2,4))+         RBA10381
     2       YY(3)*E(5,1)*E(5,2)*E(5,4)/(E(3,1)*E(3,2)*E(3,4))+         RBA10382
     3       YY(4)*E(5,1)*E(5,2)*E(5,3)/(E(4,1)*E(4,2)*E(4,3))          RBA10383
      RETURN                                                            RBA10390
      END                                                               RBA10400
```

2.626	2.340	1.925	1.5744	1.1765	.7055	1
0.3739	0.0964	-.1578	2.560	2.295	1.907	2
1.5722	1.1880	.7261	.3973	.1200	-.1359	3
2.538	2.282	1.905	1.5792	1.2024	.7463	4
.4192	.1413	-.1158	2.542	2.288	1.914	5
1.5911	1.2179	.7649	.4391	.1612	-.0974	6
2.560	2.304	1.930	1.6065	1.2341	.7824	7
.4565	.1784	-.0802	2.579	2.323	1.946	8
1.6230	1.2503	.7987	.4729	.1946	-.0648	9
2.594	2.339	1.963	1.6391	1.2657	.8138	10
.4879	.2095	-.0504	2.601	2.350	1.977	11
1.6534	1.2801	.8278	.5018	.2232	-.0369	1
2.6	2.355	1.987	1.6657	1.2931	.8409	13
.5148	.2361	-.0242	2.592	2.354	1.993	14
1.6755	1.3047	.8532	.5272	.2484	-.0119	15
2.580	2.348	1.995	1.6828	1.3149	.8648	16
.5391	.2604	.0000	2.563	2.339	1.995	17
1.6874	1.3236	.8759	.5508	.2724	.0119	18
2.544	2.328	1.992	1.6898	1.3309	.8864	19
.5624	.2844	.0242	2.523	2.314	1.987	20
1.6903	1.3368	.8964	.5741	.2969	.0369	21
2.503	2.298	1.979	1.6896	1.3413	.9062	22
.5859	.3098	.0504	2.482	2.282	1.971	23
1.6871	1.3455	.9152	.5979	.3234	.0648	24
2.461	2.266	1.962	1.6838	1.3484	.9247	25
.6103	.3373	.0802	2.440	2.249	1.952	26
1.6796	1.3507	.9341	.6234	.3530	.0974	27
2.420	2.233	1.941	1.6747	1.3526	.9433	28
.6371	.3696	.1158	2.399	2.216	1.930	29
1.6695	1.3540	.9525	.6515	.3877	.1359	30
2.380	2.199	1.919	1.6638	1.3554	.9623	31
.6668	.4067	.1578	.005	.01	.025	
.05	.1	.2	.3	.4	.5	
.6	.7	.8	.9	.95	.975	
.99	.995					

2.622	2.613	2.598	2.576	1
2.574	2.583	2.584	2.576	2
2.553	2.566	2.575	2.576	3
2.548	2.559	2.570	2.576	4
2.554	2.558	2.568	2.576	5
2.565	2.562	2.567	2.576	6
2.578	2.568	2.569	2.576	7
2.587	2.575	2.571	2.576	8
2.594	2.581	2.574	2.576	9
2.597	2.586	2.578	2.576	10
2.595	2.590	2.580	2.576	11
2.589	2.591	2.582	2.576	12
2.581	2.589	2.583	2.576	13
2.570	2.585	2.584	2.576	14
2.557	2.579	2.583	2.576	15
2.542	2.572	2.581	2.576	16
2.525	2.562	2.576	2.576	17
2.507	2.551	2.571	2.576	18
2.489	2.537	2.564	2.576	19
2.470	2.522	2.556	2.576	20
2.450	2.504	2.545	2.576	21
2.343	2.342	2.337	2.326	22
2.311	2.322	2.327	2.326	23
2.296	2.310	2.321	2.326	24
2.295	2.306	2.318	2.326	25
2.302	2.307	2.317	2.326	26
2.313	2.311	2.317	2.326	27
2.324	2.317	2.319	2.326	28
2.335	2.324	2.322	2.326	29
2.343	2.330	2.324	2.326	30
2.348	2.336	2.327	2.326	31
2.350	2.340	2.330	2.326	32
2.349	2.342	2.333	2.326	33
2.344	2.343	2.334	2.326	34
2.337	2.342	2.335	2.326	35
2.329	2.339	2.335	2.326	36
2.318	2.334	2.334	2.326	37
2.306	2.327	2.331	2.326	38
2.293	2.318	2.328	2.326	39
2.279	2.308	2.323	2.326	40
2.264	2.296	2.316	2.326	41
2.247	2.283	2.309	2.326	42
1.939	1.950	1.956	1.960	43
1.924	1.939	1.951	1.960	44
1.920	1.935	1.948	1.960	45

1.923	1.935	1.948	1.960	46
1.931	1.938	1.948	1.960	47
1.941	1.942	1.950	1.960	48
1.952	1.948	1.952	1.960	49
1.963	1.955	1.954	1.960	50
1.972	1.962	1.957	1.960	51
1.979	1.968	1.960	1.960	52
1.985	1.972	1.963	1.960	53
1.988	1.976	1.966	1.960	54
1.989	1.979	1.968	1.960	55
1.988	1.981	1.970	1.960	56
1.985	1.980	1.971	1.960	57
1.981	1.979	1.971	1.960	58
1.975	1.977	1.970	1.960	59
1.968	1.972	1.969	1.960	60
1.959	1.967	1.967	1.960	61
1.950	1.961	1.964	1.960	62
1.940	1.953	1.959	1.960	63
1.5952	1.6141	1.6307	1.6449	64
1.5925	1.6116	1.6292	1.6449	65
1.5954	1.6122	1.6290	1.6449	66
1.6018	1.6150	1.6299	1.6449	67
1.6109	1.6196	1.6313	1.6449	68
1.6213	1.6251	1.6334	1.6449	69
1.6322	1.6313	1.6359	1.6449	70
1.6428	1.6379	1.6387	1.6449	71
1.6524	1.6443	1.6417	1.6449	72
1.6610	1.6503	1.6448	1.6449	73
1.6682	1.6558	1.6477	1.6449	74
1.6738	1.6606	1.6505	1.6449	75
1.6778	1.6646	1.6529	1.6449	76
1.6804	1.6676	1.6550	1.6449	77
1.6816	1.6698	1.6567	1.6449	78
1.6817	1.6709	1.6580	1.6449	79
1.6804	1.6714	1.6587	1.6449	80
1.6782	1.6707	1.6589	1.6449	81
1.6750	1.6691	1.6586	1.6449	82
1.6711	1.6667	1.6576	1.6449	83
1.6665	1.6634	1.6559	1.6449	84
1.2049	1.2319	1.2575	1.2816	85
1.2121	1.2359	1.2591	1.2816	86
1.2209	1.2409	1.2612	1.2816	87
1.2311	1.2466	1.2636	1.2816	88
1.2418	1.2526	1.2661	1.2816	89
1.2527	1.2591	1.2688	1.2816	90

1.2634	1.2656	1.2718	1.2816	91
1.2738	1.2720	1.2748	1.2816	92
1.2836	1.2784	1.2778	1.2816	93
1.2926	1.2846	1.2809	1.2816	94
1.3009	1.2903	1.2838	1.2816	95
1.3083	1.2957	1.2866	1.2816	96
1.3149	1.3007	1.2893	1.2816	97
1.3207	1.3052	1.2919	1.2816	98
1.3256	1.3093	1.2943	1.2816	99
1.3294	1.3128	1.2964	1.2816	100
1.3329	1.3158	1.2983	1.2816	101
1.3357	1.3184	1.3001	1.2816	102
1.3380	1.3206	1.3015	1.2816	103
1.3397	1.3224	1.3028	1.2816	104
1.3413	1.3238	1.3038	1.2816	105
.7408	.7753	.8089	.8416	106
.7552	.7842	.8130	.8416	107
.7692	.7928	.8169	.8416	108
.7824	.8009	.8207	.8416	109
.7944	.8083	.8241	.8416	110
.8059	.8156	.8275	.8416	111
.8168	.8225	.8308	.8416	112
.8270	.8291	.8340	.8416	113
.8367	.8354	.8371	.8416	114
.8459	.8415	.8401	.8416	115
.8547	.8475	.8431	.8416	116
.8632	.8532	.8460	.8416	117
.8715	.8589	.8489	.8416	118
.8795	.8645	.8519	.8416	119
.8873	.8701	.8548	.8416	120
.8948	.8756	.8577	.8416	121
.9024	.8809	.8605	.8416	122
.9101	.8865	.8636	.8416	123
.9179	.8923	.8668	.8416	124
.9258	.8983	.8700	.8416	125
.9341	.9044	.8734	.8416	126
.4124	.4503	.4876	.5244	126A
.4293	.4611	.4928	.5244	127
.4449	.4710	.4975	.5244	128
.4592	.4802	.5019	.5244	129
.4717	.4882	.5057	.5244	130
.4837	.4959	.5095	.5244	131
.4946	.5030	.5129	.5244	132
.5048	.5097	.5162	.5244	133
.5145	.5160	.5193	.5244	134

.5237	.5221	.5223	.5244	135
.5326	.5281	.5253	.5244	136
.5414	.5340	.5282	.5244	137
.5502	.5398	.5312	.5244	138
.5591	.5459	.5343	.5244	139
.5682	.5521	.5375	.5244	140
.5777	.5585	.5407	.5244	141
.5870	.5649	.5441	.5244	142
.5974	.5721	.5479	.5244	143
.6082	.5797	.5518	.5244	144
.6198	.5879	.5560	.5244	145
.6320	.5966	.5607	.5244	146
.1362	.1755	.2146	.2533	147
.1536	.1870	.2203	.2533	148
.1693	.1973	.2252	.2533	149
.1839	.2067	.2299	.2533	150
.1966	.2151	.2339	.2533	151
.2085	.2229	.2378	.2533	152
.2195	.2300	.2413	.2533	153
.2296	.2368	.2446	.2533	154
.2392	.2431	.2478	.2533	155
.2483	.2491	.2508	.2533	156
.2573	.2551	.2537	.2533	157
.2662	.2610	.2567	.2533	158
.2753	.2671	.2598	.2533	159
.2846	.2733	.2629	.2533	160
.2944	.2798	.2662	.2533	161
.3046	.2867	.2696	.2533	162
.3152	.2939	.2733	.2533	163
.3272	.3020	.2773	.2533	164
.3398	.3105	.2818	.2533	165
.3537	.3200	.2865	.2533	166
.3686	.3303	.2919	.2533	167
-.1182	-.0787	-.0393	.0000	168
-.1015	-.0674	-.0336	.0000	169
-.0864	-.0574	-.0286	.0000	170
-.0725	-.0481	-.0240	.0000	171
-.0598	-.0397	-.0198	.0000	172
-.0483	-.0320	-.0159	.0000	173
-.0376	-.0250	-.0124	.0000	174
-.0275	-.0182	-.0091	.0000	175
-.0181	-.0120	-.0060	.0000	176
-.0089	-.0059	-.0030	.0000	177
.0000	.0000	.0000	.00000	178
.0089	.0059	.0030	.00000	179

```
  .0181     .0120     .0060     .00000                                  180
  .0275     .0182     .0091     .00000                                  181
  .0376     .0250     .0124     .00000                                  182
  .0483     .0320     .0159     .00000                                  183
  .0598     .0397     .0198     .00000                                  184
  .0725     .0481     .0240     .00000                                  185
  .0864     .0574     .0286     .00000                                  186
  .1015     .0674     .0336     .00000                                  187
  .1182     .0787     .0393     .00000                                  188
0.0         20.0      .99       .99       .99       2.036
2.036       2.036     10.0      10.0      10.0
50.00       46.16     42.35     38.60     36.75     34.93
33.13       31.37     29.64     27.94     26.28     24.67
23.10       21.57     20.10     18.67     17.29     15.97
14.71       13.50     12.34     11.24     10.21     9.22
8.30        7.44      6.63      5.87      5.18      4.54
3.95        3.41      2.93      2.49      2.09      1.75
1.44        1.17      .94       .74       .58       .437
.324        .233      .163      .109      .069      .041
.023        .011      .005      .001      .000      .000
.000        .000      .000      .000      .000      .000
.000        .000      .000      .000      .000      .000
.000        .000      .000      .000      .000      .000
.000        .000      .000      .000      .000      .000
.000        .000      .000
0.0         10.0      0.90      0.90      0.90      1.26
1.26        1.26      10.0      10.0      10.0
0.0         10.0      .99       .99       .99       2.036
2.036       2.036     10.0      10.0      10.0
0.0         10.0      0.999     0.999     0.999     2.41
2.41        2.41      10.0      10.0      10.0
-1.0        1.0       1.0       1.0       1.0       1.0
1.0         1.0
```

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.1000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.896154 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.896154 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.896154 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	0.41720	0.65683	0.41720	0.65683	0.41720	0.65683
1.0	0.48902	0.68243	0.48902	0.68243	0.48902	0.68243
2.5	0.59667	0.71947	0.59667	0.71947	0.59667	0.71947
5.0	0.69282	0.75099	0.69282	0.75099	0.69282	0.75099
10.0	0.80925	0.78702	0.80925	0.78702	0.80925	0.78702
20.0	0.96132	0.83009	0.96132	0.83009	0.96132	0.83009
30.0	1.08056	0.86030	1.08056	0.86030	1.08056	0.86030
40.0	1.19066	0.88555	1.19066	0.88555	1.19066	0.88555
50.0	1.30169	0.90811	1.30169	0.90811	1.30169	0.90811
60.0	1.42145	0.92908	1.42145	0.92908	1.42145	0.92908
70.0	1.56145	0.94967	1.56145	0.94967	1.56145	0.94967
80.0	1.74356	0.97008	1.74356	0.97008	1.74356	0.97008
90.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
95.0	2.32201	0.99798	2.32201	0.99798	2.32201	0.99798
97.5	2.61205	0.99990	2.61205	0.99990	2.61205	0.99990
99.0	3.00784	1.00000	3.00784	1.00000	3.00784	1.00000
99.5	3.32443	1.00000	3.32443	1.00000	3.32443	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.891328

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000001
0.50	0.000013
0.55	0.000100
0.60	0.000616
0.65	0.003110
0.70	0.012753
0.75	0.041840
0.80	0.107242
0.85	0.206965
0.90	0.282921
0.95	0.244265
1.00	0.100173

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.64148451

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.7600 UPPER = 0.8080 MEAN = 0.7840 MAX ERROR = 0.0240

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.9998 UPPER = 0.9992 MEAN = 0.9995 MAX ERROR = 0.0003

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.2000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.932777 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.932777 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.932777 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	0.61351	0.72509	0.61351	0.72509	0.61351	0.72509
1.0	0.68530	0.74857	0.68530	0.74857	0.68530	0.74857
2.5	0.79479	0.78270	0.79479	0.78270	0.79479	0.78270
5.0	0.89416	0.81163	0.89416	0.81163	0.89416	0.81163
10.0	1.01638	0.84443	1.01638	0.84443	1.01638	0.84443
20.0	1.17836	0.88284	1.17836	0.88284	1.17836	0.88284
30.0	1.30688	0.90907	1.30688	0.90907	1.30688	0.90907
40.0	1.42650	0.92989	1.42650	0.92989	1.42650	0.92989
50.0	1.54779	0.94790	1.54779	0.94790	1.54779	0.94790
60.0	1.67940	0.96368	1.67940	0.96368	1.67940	0.96368
70.0	1.83396	0.97782	1.83396	0.97782	1.83396	0.97782
80.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
90.0	2.36222	0.99850	2.36222	0.99850	2.36222	0.99850
95.0	2.68271	0.99998	2.68271	0.99998	2.68271	0.99998
97.5	3.00862	1.00000	3.00862	1.00000	3.00862	1.00000
99.0	3.45554	1.00000	3.45554	1.00000	3.45554	1.00000
99.5	3.81297	1.00000	3.81297	1.00000	3.81297	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.922734

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000000
0.50	0.000001
0.55	0.000007
0.60	0.000061
0.65	0.000448
0.70	0.002675
0.75	0.012780
0.80	0.047694
0.85	0.134020
0.90	0.266751
0.95	0.335331
1.00	0.200232

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.74887731

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.8590 UPPER = 0.8910 MEAN = 0.8750 MAX ERROR = 0.0160

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.9979 UPPER = 0.9923 MEAN = 0.9951 MAX ERROR = 0.0028

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.3000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.952682 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.952682 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.952682 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	0.75129	0.76940	0.75129	0.76940	0.75129	0.76940
1.0	0.82409	0.79138	0.82409	0.79138	0.82409	0.79138
2.5	0.93617	0.82328	0.93617	0.82328	0.93617	0.82328
5.0	1.03888	0.85010	1.03888	0.85010	1.03888	0.85010
10.0	1.16631	0.88019	1.16631	0.88019	1.16631	0.88019
20.0	1.33663	0.91454	1.33663	0.91454	1.33663	0.91454
30.0	1.47271	0.93715	1.47271	0.93715	1.47271	0.93715
40.0	1.59992	0.95459	1.59992	0.95459	1.59992	0.95459
50.0	1.72926	0.96871	1.72926	0.96871	1.72926	0.96871
60.0	1.87013	0.98047	1.87013	0.98047	1.87013	0.98047
70.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
80.0	2.25338	0.99682	2.25338	0.99682	2.25338	0.99682
90.0	2.60549	0.99990	2.60549	0.99990	2.60549	0.99990
95.0	2.95221	1.00000	2.95221	1.00000	2.95221	1.00000
97.5	3.30529	1.00000	3.30529	1.00000	3.30529	1.00000
99.0	3.79110	1.00000	3.79110	1.00000	3.79110	1.00000
99.5	4.17930	1.00000	4.17930	1.00000	4.17930	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.941641

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000000
0.50	0.000000
0.55	0.000001
0.60	0.000008
0.65	0.000082
0.70	0.000660
0.75	0.004259
0.80	0.021473
0.85	0.081524
0.90	0.219234
0.95	0.372357
1.00	0.300402

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.81419703

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.9110 UPPER = 0.9360 MEAN = 0.9235 MAX ERROR = 0.0125

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.9867 UPPER = 0.9693 MEAN = 0.9780 MAX ERROR = 0.0087

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.4000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.965850 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.965850 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.965850 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	0.86699	0.80386	0.86699	0.80386	0.86699	0.80386
1.0	0.94124	0.82468	0.94124	0.82468	0.94124	0.82468
2.5	1.05627	0.85442	1.05627	0.85442	1.05627	0.85442
5.0	1.16243	0.87933	1.16243	0.87933	1.16243	0.87933
10.0	1.29492	0.90679	1.29492	0.90679	1.29492	0.90679
20.0	1.47305	0.93720	1.47305	0.93720	1.47305	0.93720
30.0	1.61608	0.95650	1.61608	0.95650	1.61608	0.95650
40.0	1.75018	0.97072	1.75018	0.97072	1.75018	0.97072
50.0	1.88681	0.98160	1.88681	0.98160	1.88681	0.98160
60.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
70.0	2.21199	0.99590	2.21199	0.99590	2.21199	0.99590
80.0	2.44305	0.99925	2.44305	0.99925	2.44305	0.99925
90.0	2.81816	1.00000	2.81816	1.00000	2.81816	1.00000
95.0	3.18814	1.00000	3.18814	1.00000	3.18814	1.00000
97.5	3.56525	1.00000	3.56525	1.00000	3.56525	1.00000
99.0	4.08523	1.00000	4.08523	1.00000	4.08523	1.00000
99.5	4.50048	1.00000	4.50048	1.00000	4.50048	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

ROVERALL	PROB(RO)	CUMPR(RO)	ROVERALL	PROB(RO)	CUMPR(RO)	ROVERALL	PROB(RO)	CUMPR(RO)
0.	0.01492503	0.01492503	0.0100	0.	0.01492503	0.0200	0.	0.01492503
0.0300	0.	0.01492503	0.0400	0.	0.01492503	0.0500	0.	0.01492503
0.0600	0.	0.01492503	0.0700	0.	0.01492503	0.0800	0.	0.01492503
0.0900	0.	0.01492503	0.1000	0.	0.01492503	0.1100	0.	0.01492503
0.1200	0.	0.01492503	0.1300	0.	0.01492503	0.1400	0.	0.01492503
0.1500	0.	0.01492503	0.1600	0.	0.01492503	0.1700	0.	0.01492503
0.1800	0.	0.01492503	0.1900	0.	0.01492503	0.2000	0.	0.01492503
0.2100	0.	0.01492503	0.2200	0.	0.01492503	0.2300	0.	0.01492503
0.2400	0.	0.01492503	0.2500	0.	0.01492503	0.2600	0.	0.01492503
0.2700	0.	0.01492503	0.2800	0.	0.01492503	0.2900	0.	0.01492503
0.3000	0.	0.01492503	0.3100	0.	0.01492503	0.3200	0.00000000	0.01492503
0.3300	0.	0.01492503	0.3400	0.00000000	0.01492503	0.3500	0.00000000	0.01492503
0.3600	0.	0.01492503	0.3700	0.00000000	0.01492503	0.3800	0.00000000	0.01492503
0.3900	0.00000000	0.01492503	0.4000	0.00000000	0.01492503	0.4100	0.00000000	0.01492506
0.4200	0.00000000	0.01492509	0.4300	0.00000000	0.01492517	0.4400	0.00000001	0.01492537
0.4500	0.00000001	0.01492567	0.4600	0.00000009	0.01492627	0.4700	0.00000004	0.01492791
0.4800	0.00000024	0.01493000	0.4900	0.00000004	0.01493315	0.5000	0.00000013	0.01494377
0.5100	0.00000478	0.01495537	0.5200	0.00000162	0.01497506	0.5300	0.00000545	0.01502942
0.5400	0.00000210	0.01505941	0.5500	0.00000071	0.01516680	0.5600	0.00000851	0.01530801
0.5700	0.00000318	0.01548024	0.5800	0.00001843	0.01589362	0.5900	0.00007267	0.01623063
0.6000	0.00006202	0.01704764	0.6100	0.00018398	0.01783357	0.6200	0.00011858	0.01922864
0.6300	0.00012377	0.02072189	0.6400	0.00024632	0.02316519	0.6500	0.00040970	0.02585185
0.6600	0.00025321	0.02983673	0.6700	0.00049219	0.03476414	0.6800	0.00120974	0.04101991
0.6900	0.00132950	0.04856262	0.7000	0.00082433	0.05695528	0.7100	0.00272287	0.06960550
0.7200	0.00133257	0.08163185	0.7300	0.00058593	0.09641985	0.7400	0.00178781	0.11585311
0.7500	0.00207534	0.13753104	0.7600	0.00241934	0.16052559	0.7700	0.00158941	0.18622791
0.7800	0.00410542	0.21631490	0.7900	0.00118320	0.25002265	0.8000	0.00574452	0.28925560
0.8100	0.00345492	0.32659665	0.8200	0.00362954	0.36439214	0.8300	0.00334818	0.40938611
0.8400	0.00409123	0.45305341	0.8500	0.00424828	0.50112084	0.8600	0.00495322	0.54881205
0.8700	0.00805348	0.59725913	0.8800	0.00820407	0.64387398	0.8900	0.00727869	0.69253529
0.9000	0.00241712	0.73495970	0.9100	0.00240076	0.77914353	0.9200	0.00240076	0.81562601
0.9300	0.00232546	0.85328377	0.9400	0.00337525	0.89101683	0.9500	0.00037502	0.91677263
0.9600	0.00360115	0.93957987	0.9700	0.00280089	0.95798571	0.9800	0.00240076	0.97479104
0.9900	0.00120038	0.98959574	1.0000	0.00040013	0.99999903			

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

ROVERALL	PROB(RO)	CUMPR(RO)	ROVERALL	PROB(RO)	CUMPR(RO)	ROVERALL	PROB(RO)	CUMPR(RO)
0.	0.	0.	0.0100	0.	0.	0.0200	0.	0.
0.0300	0.	0.	0.0400	0.	0.	0.0500	0.	0.
0.0600	0.	0.	0.0700	0.	0.	0.0800	0.	0.
0.0900	0.	0.	0.1000	0.	0.	0.1100	0.	0.
0.1200	0.	0.	0.1300	0.	0.	0.1400	0.	0.
0.1500	0.	0.	0.1600	0.	0.	0.1700	0.	0.
0.1800	0.	0.	0.1900	0.	0.	0.2000	0.	0.
0.2100	0.	0.	0.2200	0.	0.	0.2300	0.	0.
0.2400	0.	0.	0.2500	0.	0.	0.2600	0.	0.
0.2700	0.	0.	0.2800	0.	0.	0.2900	0.	0.
0.3000	0.	0.	0.3100	0.	0.	0.3200	0.00000000	0.00000000
0.3300	0.	0.00000000	0.3400	0.00000000	0.00000000	0.3500	0.00000000	0.00000000
0.3600	0.	0.00000000	0.3700	0.00000000	0.00000000	0.3800	0.00000000	0.00000000
0.3900	0.00000000	0.00000000	0.4000	0.00000000	0.00000000	0.4100	0.00000000	0.00000001
0.4200	0.00000000	0.00000001	0.4300	0.00000000	0.00000003	0.4400	0.00000000	0.00000007
0.4500	0.00000000	0.00000014	0.4600	0.00000001	0.00000031	0.4700	0.00000001	0.00000072
0.4800	0.00000010	0.00000113	0.4900	0.00000003	0.00000207	0.5000	0.00000007	0.00000460
0.5100	0.00000084	0.00000695	0.5200	0.00000038	0.00001255	0.5300	0.00000218	0.00002577
0.5400	0.00000121	0.00003416	0.5500	0.00000037	0.00006339	0.5600	0.00000315	0.00009622
0.5700	0.00000110	0.00014588	0.5800	0.00000570	0.00024884	0.5900	0.00002074	0.00035487
0.6000	0.00003605	0.00059131	0.6100	0.00003120	0.00080161	0.6200	0.00004218	0.00127634
0.6300	0.00005407	0.00175053	0.6400	0.00013229	0.00260524	0.6500	0.00013638	0.00346753
0.6600	0.00010289	0.00499472	0.6700	0.00021930	0.00662539	0.6800	0.00048167	0.00931313
0.6900	0.00041826	0.01219357	0.7000	0.00057701	0.01623239	0.7100	0.00097734	0.02134118
0.7200	0.00078238	0.02752886	0.7300	0.00053658	0.03515667	0.7400	0.00101220	0.04460113
0.7500	0.00107789	0.05658350	0.7600	0.00126592	0.06943619	0.7700	0.00105384	0.08666373
0.7800	0.00234904	0.10401760	0.7900	0.00105798	0.12688173	0.8000	0.00312908	0.15438426
0.8100	0.00322319	0.18322475	0.8200	0.00362954	0.21422631	0.8300	0.00194537	0.24861910
0.8400	0.00449281	0.29008742	0.8500	0.00373664	0.33364319	0.8600	0.00479227	0.37995511
0.8700	0.00845507	0.43120784	0.8800	0.00800548	0.48097976	0.8900	0.01390588	0.54282456
0.9000	0.00583604	0.59795452	0.9100	0.00480153	0.65406468	0.9200	0.00480153	0.69977372
0.9300	0.00232546	0.75235876	0.9400	0.00900066	0.81552134	0.9500	0.00300021	0.85875431
0.9600	0.00360115	0.89236499	0.9700	0.00520165	0.91917351	0.9800	0.00360115	0.94558190
0.9900	0.00480153	0.97479118	1.0000	0.00320102	0.99999919			

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.955234

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000000
0.50	0.000000
0.55	0.000000
0.60	0.000001
0.65	0.000015
0.70	0.000164
0.75	0.001402
0.80	0.009350
0.85	0.046947
0.90	0.166964
0.95	0.375028
1.00	0.400128

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.86067499

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.9430 UPPER = 0.9630 MEAN = 0.9530 MAX ERROR = 0.0100

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.9580 UPPER = 0.9191 MEAN = 0.9385 MAX ERROR = 0.0194

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.5000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.975376 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.975376 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.975376 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	0.97283	0.83313	0.97283	0.83313	0.97283	0.83313
1.0	1.04904	0.85266	1.04904	0.85266	1.04904	0.85266
2.5	1.16762	0.88048	1.16762	0.88048	1.16762	0.88048
5.0	1.27764	0.90337	1.27764	0.90337	1.27764	0.90337
10.0	1.41544	0.92810	1.41544	0.92810	1.41544	0.92810
20.0	1.60152	0.95478	1.60152	0.95478	1.60152	0.95478
30.0	1.75142	0.97082	1.75142	0.97082	1.75142	0.97082
40.0	1.89222	0.98197	1.89222	0.98197	1.89222	0.98197
50.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
60.0	2.19328	0.99544	2.19328	0.99544	2.19328	0.99544
70.0	2.37899	0.99868	2.37899	0.99868	2.37899	0.99868
80.0	2.62319	0.99992	2.62319	0.99992	2.62319	0.99992
90.0	3.02037	1.00000	3.02037	1.00000	3.02037	1.00000
95.0	3.41274	1.00000	3.41274	1.00000	3.41274	1.00000
97.5	3.81297	1.00000	3.81297	1.00000	3.81297	1.00000
99.0	4.36529	1.00000	4.36529	1.00000	4.36529	1.00000
99.5	4.80634	1.00000	4.80634	1.00000	4.80634	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.965859

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000000
0.50	0.000000
0.55	0.000000
0.60	0.000000
0.65	0.000003
0.70	0.000038
0.75	0.000427
0.80	0.003776
0.85	0.025134
0.90	0.118508
0.95	0.352911
1.00	0.499203

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.89625189

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.9710 UPPER = 0.9820 MEAN = 0.9765 MAX ERROR = 0.0055

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.8991 UPPER = 0.8297 MEAN = 0.8644 MAX ERROR = 0.0347

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** PERFORMANCE RELIABILITY DISTRIBUTIONS *****

A = PROBABILITY OF H GREATER THAN OBSERVED GIVEN ETA = 0.6000

SPECIFIC IMPULSE (ISP) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA ISP = 0.982649 N = 10.000

THRUST (FN) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA FN = 0.982649 N = 10.000

MIXTURE RATIO (RM) OBSERVED K = 2.0360 OBSERVED R = 0.9900 ETA RM = 0.982649 N = 10.000

	SPECIFIC IMPULSE		THRUST		MIXTURE RATIO	
PERCENTILE	K	R	K	R	K	R
0.0	-INFINITY	0.00000	-INFINITY	0.00000	-INFINITY	0.00000
0.5	1.07823	0.85973	1.07823	0.85973	1.07823	0.85973
1.0	1.15664	0.87806	1.15664	0.87806	1.15664	0.87806
2.5	1.27910	0.90366	1.27910	0.90366	1.27910	0.90366
5.0	1.39326	0.92444	1.39326	0.92444	1.39326	0.92444
10.0	1.53672	0.94637	1.53672	0.94637	1.53672	0.94637
20.0	1.73115	0.96889	1.73115	0.96889	1.73115	0.96889
30.0	1.88821	0.98170	1.88821	0.98170	1.88821	0.98170
40.0	2.03600	0.98996	2.03600	0.98996	2.03600	0.98996
50.0	2.18720	0.99526	2.18720	0.99526	2.18720	0.99526
60.0	2.35286	0.99840	2.35286	0.99840	2.35286	0.99840
70.0	2.54863	0.99977	2.54863	0.99977	2.54863	0.99977
80.0	2.80639	1.00000	2.80639	1.00000	2.80639	1.00000
90.0	3.22629	1.00000	3.22629	1.00000	3.22629	1.00000
95.0	3.64163	1.00000	3.64163	1.00000	3.64163	1.00000
97.5	4.06557	1.00000	4.06557	1.00000	4.06557	1.00000
99.0	4.65101	1.00000	4.65101	1.00000	4.65101	1.00000
99.5	5.11848	1.00000	5.11848	1.00000	5.11848	1.00000
100.0	+INFINITY	1.00000	+INFINITY	1.00000	+INFINITY	1.00000

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** FUNCTIONAL RELIABILITY DISTRIBUTION *****

OBSERVED FAILURES = 0. TESTS = 20.0000 OBSERVED R = 1.0000 ETA FUNCTIONAL = 0.974766

R	PROB(R)
0.	0.000000
0.05	0.000000
0.10	0.000000
0.15	0.000000
0.20	0.000000
0.25	0.000000
0.30	0.000000
0.35	0.000000
0.40	0.000000
0.45	0.000000
0.50	0.000000
0.55	0.000000
0.60	0.000000
0.65	0.000000
0.70	0.000007
0.75	0.000108
0.80	0.001305
0.85	0.011863
0.90	0.076374
0.95	0.310547
1.00	0.599797

***** RESULTS - OVERALL RELIABILITY DISTRIBUTION *****

OBSERVED OVERALL RELIABILITY = 0.97029898 ETA OVERALL = 0.92490070

OVERALL RELIABILITY DISTRIBUTION NINETIETH PERCENTILE

LOWER = 0.9880 UPPER = 0.9950 MEAN = 0.9915 MAX ERROR = 0.0035

OBSERVED OVERALL RELIABILITY FRACTILE

LOWER = 0.8152 UPPER = 0.7157 MEAN = 0.7655 MAX ERROR = 0.0498

PROGRAM 13.2 OVERALL RELIABILITY CONFIDENCE BOUND

***** SUMMARY OF RESULTS *****

	A	ETA ISP	ETA FN	ETA RM	ETA FU	ETA OV	ZP ISP	ZP FN	ZP RM
8	0.60000	0.98265	0.98265	0.98265	0.97477	0.92490	2.11181	2.11181	2.11181
9	0.50000	0.97538	0.97538	0.97538	0.96586	0.89625	1.96644	1.96644	1.96644
10	0.40000	0.96585	0.96585	0.96585	0.95523	0.86067	1.82302	1.82302	1.82302
11	0.30000	0.95268	0.95268	0.95268	0.94164	0.81420	1.67144	1.67144	1.67144
12	0.20000	0.93278	0.93278	0.93278	0.92273	0.74888	1.49680	1.49680	1.49680
13	0.10000	0.89615	0.89615	0.89615	0.89133	0.64148	1.25994	1.25994	1.25994
14	0.05000	0.	0.	0.	0.	0.	0.	0.	0.
15	0.02500	0.	0.	0.	0.	0.	0.	0.	0.
16	0.01000	0.	0.	0.	0.	0.	0.	0.	0.
17	0.00500	0.	0.	0.	0.	0.	0.	0.	0.

		FRACTILE				PERCENTILE			
	A	LOWER	UPPER	MEAN	MAX ERROR	LOWER	UPPER	MEAN	MAX ERROR
8	0.60000	0.81524	0.71568	0.76546	0.04978	0.98800	0.99500	0.99150	0.00350
9	0.50000	0.89913	0.82974	0.86444	0.03469	0.97100	0.98200	0.97650	0.00550
10	0.40000	0.95795	0.91914	0.93854	0.01941	0.94300	0.96300	0.95300	0.01000
11	0.30000	0.98672	0.96930	0.97801	0.00871	0.91100	0.93600	0.92350	0.01250
12	0.20000	0.99794	0.99233	0.99514	0.00280	0.85900	0.89100	0.87500	0.01600
13	0.10000	0.99984	0.99922	0.99953	0.00031	0.76000	0.80800	0.78400	0.02400
14	0.05000	0.	0.	0.	0.	0.	0.	0.	0.
15	0.02500	0.	0.	0.	0.	0.	0.	0.	0.
16	0.01000	0.	0.	0.	0.	0.	0.	0.	0.
17	0.00500	0.	0.	0.	0.	0.	0.	0.	0.

***** RESULTS OF LAGRANGE THIRD ORDER INTERPOLATION *****

	FRACTILE				PERCENTILE			
	LOWER	UPPER	MEAN	MAX ERROR	LOWER	UPPER	MEAN	MAX ERROR
A	0.50088	0.57203	0.53646	0.03557	0.50329	0.56657	0.53493	0.03164
ETA ISP	0.97533	0.96906	0.97220	0.00314	0.97511	0.96941	0.97226	0.00285
ETA FN	0.97533	0.96906	0.97220	0.00314	0.97511	0.96941	0.97226	0.00285
ETA RM	0.97533	0.96906	0.97220	0.00314	0.97511	0.96941	0.97226	0.00285
ETA FU	0.96580	0.95865	0.96222	0.00358	0.96555	0.95908	0.96231	0.00324
ETA OV	0.89606	0.87226	0.88416	0.01190	0.89524	0.87371	0.88447	0.01076

PROGRAM 14.1

OVERALL RELIABILITY LIKELIHOOD FUNCTIONS

PROGRAM 14.1

```
title
bayesian confidence bound

chapter 0

a>1000
b>1000
c>19
d>39
e>1000
f>1000
g>31
h>63
u>31
w>1000
x>11


i=0(1)19
read(ci)
repeat

i=0(1)19
read(di)
repeato

go=0
ho=0

i=1(1)5
hi=i/10
repeat

i=6(1)11
hi=h(i-1)+0.05
repeat

i=12(1)31
hi=h(i-1)+0.01
repeat


h32=0

i=1(1)31
gi=0log(hi)
gi=0exp(20gi)
repeat

newline
1065,0,0,5.1
newline 2
space 38
caption
program 14.1 overall reliability likelihood function
newline 3
space 40
caption
likelihood function of performance reliabilities
newline 3
space 21

i=0(1)9
print(di)1,4
repeat
newline
space 21
i=0(1)9
print(ci)1,4
repeat
newline 2
space 21
i=10(1)19
print(di)1,4
repeat
newline
space 21
i=10(1)19
print(ci)1,4
repeat

newline 3
space 41
caption
likelihood function of functional reliability
newline 3

i=0(10)20
j=i+9
space 21

k=i(1)j
print(hk)1,4
repeat

newline
space 21
k=i(1)j
print(gk)1,4
repeat
newline
newline
repeat

space-21
print(h30)1,4
print(h31)1,4
newline
space-21
print(g30)1,4
print(g31)1,4
newline
newline

1)i=0(1)1000
ai=0
bi=0
ei=0
wi=0
repeat


m=31
p=19
n=0
```

```
i=n(1)m
j=n(1)p
k=n(1)p
l=n(1)p

a=hidjdkdl
b=gicjckel
q=∅intpt(1000a+0.5)
wq=+/>+b

jump 20,eq>0
aq=b
bq=b

20)eq=eq+1
jump 21,aq≥b
aq=b

21)jump 22,b≥bq
bq=b
122)repeat

repeat
repeat

2)repeat
1
newline
newline

i=1(1)11
xi=0
repeat


i=0(1)1000
x1=x1+ai
x2=x2+bi

jump 50,ei=0
wi=wi/ei

50)fi=0.5ai+0.5bi
x3=x3+fi
x4=x4+wi
repeat

i=0(1)1000
jump 51,x5≥ai
x5=ai

51)jump 52,x6≥bi
x6=bi

52)jump 53,x7≥fi
x7=fi

53)jump 54,x8≥wi
x8=wi

54)repeat

i=0(1)1000
ai=ai/x5
bi=bi/x6
fi=fi/x7
wi=wi/x8
repeat

a=1

newline 3
space 51
caption
maximum  likelihood  estimates

55)newline
newline
space 32
caption
average =
i=0(1)1000
jump 56,wi≥a
repeat

56)print(i/1000)1,5
space 5
caption
maximum =
i=0(1)1000
jump 57,ai≥a
repeat

57)print(i/1000)1,5
space 5
caption
mid-range =
i=0(1)1000
jump 58,fi≥a
repeat

58)print(i/1000)1,5
jump 101,1.0>a
jump 70

71)x1=x1/x5
x2=x2/x6
x3=x3/x7
x4=x4/x8


a=0.1
i=1(1)4
jump 30,xi≠0
xi=1

30)repeat

ao=ao/x1
bo=bo/x2
fo=fo/x3
wo=wo/x4

i=1(1)1000
ai=a(i-1)+ai/x1
bi=b(i-1)+bi/x2
fi=f(i-1)+fi/x3
wi=w(i-14+wi/x4
repeat

70)j=10(250)760

k=j+240
```

```
newline
1065,0,0,5.1
newline 2
space 38
caption
program 14.1  overall  reliability  likelihood  function

newline 3
space 43
jump 72,=1
caption
cumulative  bayesian  posterior  distribution

73)newline 4
space 14
caption
roverall          average                maximum
caption
          minimum                midrange          number
newline 2

i=j(10)k
newline
space 15
print(i/1000)1,2
space-5
print(wi)0,6
space-5
print(ai)0,6
space-5
print(bi)0,6
space-5
print(fi)0,6
space 5
print(ei)3,0
repeat


repeat

jump 71,a=1

8newline 3
space 42
caption
bayesian  lower  90  percent  confidence  bound
jump 55

72)caption
likelihood  function  of  overall  reliability
jump 73


101)end

close


0.0000    0.0001    0.0006    0.0029    0.0076
0.0113    0.0330    0.0373    0.0745    0.0803
0.1341    0.1856    0.2119    0.2142    0.2028
0.1929    0.1601    0.0955    0.0474    0.0000


0.0000    0.5000    0.5987    0.6915    0.7500
0.7734    0.8413    0.8500    0.8944    0.9000
0.9350    0.9600    0.9750    0.9772    0.9878
0.9900    0.9938    0.9975    0.9990    1.0000


***Z


**********
```

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

LIKELIHOOD FUNCTION OF PERFORMANCE RELIABILITIES

0.0000	0.5000	0.5987	0.6915	0.7500	0.7734	0.8413	0.8500	0.8944	0.9000
0.0000	0.0001	0.0006	0.0029	0.0076	0.0113	0.0330	0.0373	0.0745	0.0803
0.9350	0.9600	0.9750	0.9772	0.9878	0.9900	0.9938	0.9975	0.9990	1.0000
0.1341	0.1856	0.2119	0.2142	0.2028	0.1929	0.1601	0.0955	0.0474	0.0000

LIKELIHOOD FUNCTION OF FUNCTIONAL RELIABILITY

0.0000	0.1000	0.2000	0.3000	0.4000	0.5000	0.5500	0.6000	0.6500	0.7000
0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0000	0.0002	0.0008
0.7500	0.8000	0.8100	0.8200	0.8300	0.8400	0.8500	0.8600	0.8700	0.8800
0.0032	0.0115	0.0148	0.0189	0.0241	0.0306	0.0388	0.0490	0.0617	0.0776
0.8900	0.9000	0.9100	0.9200	0.9300	0.9400	0.9500	0.9600	0.9700	0.9800
0.0972	0.1216	0.1516	0.1887	0.2342	0.2901	0.3585	0.4420	0.5438	0.6676
0.9900	1.0000								
0.8179	1.0000								

MAXIMUM LIKELIHOOD ESTIMATES

AVERAGE = 0.94300 MAXIMUM = 0.93300 MID-RANGE = 0.93300

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

LIKELIHOOD FUNCTION OF OVERALL RELIABILITY

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.01	0.000000, 0	0.000000, 0	0.000000, 0	0.000000, 0	0
0.02	0.000000, 0	0.000000, 0	0.000000, 0	0.000000, 0	0
0.03	1.495503, -24	6.401662, -24	0.000000, 0	6.401662, -24	48
0.04	1.587928, -24	6.561040, -25	6.923760, -24	9.095186, -25	63
0.05	2.623706, -20	1.118772, -18	0.000000, 0	1.118772, -18	160
0.06	7.217247, -19	6.712630, -18	0.000000, 0	6.712630, -18	103
0.07	5.547730, -19	4.757683, -18	0.000000, 0	4.757683, -18	111
0.08	4.657350, -18	1.585894, -17	0.000000, 0	1.585894, -17	138
0.09	1.677285, -15	2.232122, -14	0.000000, 0	2.232122, -14	183
0.10	3.895500, -14	1.173117, -12	0.000000, 0	1.173117, -12	111
0.11	1.034447, -12	7.892145, -12	3.567878, -16	7.892158, -12	28
0.12	3.836111, -12	4.497449, -11	0.000000, 0	4.497449, -11	64
0.13	6.229153, -12	3.767714, -11	0.000000, 0	3.767714, -11	84
0.14	5.775767, -12	4.361541, -11	0.000000, 0	4.361541, -11	102
0.15	4.869045, -11	6.105101, -10	0.000000, 0	6.105101, -10	208
0.16	5.613928, -11	3.561593, -10	0.000000, 0	3.561593, -10	135
0.17	3.609074, -10	1.313156, -9	0.000000, 0	1.313156, -9	117
0.18	9.742591, -10	3.418061, -9	0.000000, 0	3.418061, -9	127
0.19	9.111671, -10	3.340776, -9	0.000000, 0	3.340776, -9	162
0.20	4.765725, -9	1.203726, -8	0.000000, 0	1.203726, -8	134
0.21	1.049556, -8	3.357806, -8	0.000000, 0	3.357806, -8	178
0.22	2.852630, -8	5.454798, -8	0.000000, 0	5.454798, -8	132
0.23	2.966538, -8	8.347266, -8	0.000000, 0	8.347266, -8	166
0.24	6.329403, -8	1.888511, -7	0.000000, 0	1.888511, -7	132
0.25	4.607236, -8	6.992877, -8	0.000000, 0	6.992877, -8	171

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

LIKELIHOOD FUNCTION OF OVERALL RELIABILITY

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.26	1.378763, -7	2.473340, -7	0.000000, 0	2.473340, -7	171
0.27	1.633199, -7	3.287213, -7	0.000000, 0	3.287213, -7	219
0.28	3.307752, -7	8.186940, -7	0.000000, 0	8.186940, -7	246
0.29	4.887610, -7	1.069587, -6	0.000000, 0	1.069587, -6	354
0.30	7.916849, -7	1.195448, -6	0.000000, 0	1.195448, -6	211
0.31	1.351214, -6	1.749013, -6	3.239816, -8	1.750199, -6	192
0.32	1.928557, -6	3.236475, -6	0.000000, 0	3.236475, -6	219
0.33	3.438665, -6	4.174381, -6	0.000000, 0	4.174381, -6	198
0.34	4.862234, -6	5.639215, -6	0.000000, 0	5.639215, -6	288
0.35	5.813799, -6	9.063029, -6	0.000000, 0	9.063029, -6	298
0.36	9.834544, -6	1.435269, -5	0.000000, 0	1.435269, -5	264
0.37	1.317593, -5	1.644224, -5	0.000000, 0	1.644224, -5	373
0.38	1.502890, -5	2.827527, -5	0.000000, 0	2.827527, -5	310
0.39	2.660595, -5	3.310153, -5	0.000000, 0	3.310153, -5	336
0.40	3.361644, -5	5.647473, -5	0.000000, 0	5.647473, -5	364
0.41	4.515566, -5	7.115190, -5	0.000000, 0	7.115190, -5	441
0.42	5.627437, -5	8.087677, -5	0.000000, 0	8.087677, -5	450
0.43	7.099634, -5	1.155872, -4	0.000000, 0	1.155872, -4	311
0.44	1.285126, -4	1.750155, -4	0.000000, 0	1.750155, -4	354
0.45	1.371118, -4	1.787984, -4	0.000000, 0	1.787984, -4	325
0.46	1.740318, -4	2.700602, -4	0.000000, 0	2.700602, -4	309
0.47	1.832064, -4	2.979584, -4	0.000000, 0	2.979584, -4	330
0.48	2.193195, -4	3.219792, -4	0.000000, 0	3.219792, -4	357
0.49	2.531892, -4	3.786222, -4	0.000000, 0	3.786222, -4	331
0.50	4.167692, -4	4.471434, -4	0.000000, 0	4.471434, -4	305

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

LIKELIHOOD FUNCTION OF OVERALL RELIABILITY

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.51	5.274658, -4	5.649032, -4	0.000000, 0	5.649032, -4	291
0.52	7.178493, -4	8.496562, -4	0.000000, 0	8.496562, -4	354
0.53	7.346845, -4	9.295515, -4	0.000000, 0	9.295515, -4	350
0.54	1.000517, -3	1.418915, -3	0.000000, 0	1.418915, -3	326
0.55	1.415175, -3	1.620361, -3	0.000000, 0	1.620361, -3	337
0.56	1.440985, -3	2.401053, -3	0.000000, 0	2.401053, -3	380
0.57	2.216782, -3	2.771043, -3	0.000000, 0	2.771043, -3	336
0.58	2.293315, -3	2.492031, -3	0.000000, 0	2.492031, -3	394
0.59	3.904687, -3	3.422141, -3	0.000000, 0	3.422141, -3	324
0.60	3.722050, -3	4.292079, -3	0.000000, 0	4.292079, -3	370
0.61	4.702719, -3	4.592122, -3	0.000000, 0	4.592122, -3	300
0.62	5.075022, -3	6.063942, -3	0.000000, 0	6.063942, -3	304
0.63	6.402313, -3	8.384928, -3	0.000000, 0	8.384928, -3	370
0.64	9.278626, -3	9.395264, -3	0.000000, 0	9.395264, -3	333
0.65	9.777971, -3	1.136776, -2	0.000000, 0	1.136776, -2	325
0.66	1.531914, -2	1.353875, -2	0.000000, 0	1.353875, -2	291
0.67	1.524796, -2	1.642976, -2	0.000000, 0	1.642976, -2	256
0.68	1.933437, -2	2.106507, -2	0.000000, 0	2.106507, -2	370
0.69	2.337577, -2	2.348013, -2	0.000000, 0	2.348013, -2	255
0.70	2.820837, -2	2.701296, -2	0.000000, 0	2.701296, -2	249
0.71	2.985423, -2	3.263251, -2	0.000000, 0	3.263251, -2	234
0.72	3.411659, -2	4.534921, -2	0.000000, 0	4.534921, -2	222
0.73	4.941537, -2	5.247889, -2	0.000000, 0	5.247889, -2	339
0.74	6.120442, -2	6.194223, -2	0.000000, 0	6.194223, -2	291
0.75	7.465454, -2	7.196235, -2	0.000000, 0	7.196235, -2	241

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

LIKELIHOOD FUNCTION OF OVERALL RELIABILITY

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.76	7.145345, -2	8.573063, -2	0.000000, 0	8.573063, -2	260
0.77	7.985596, -2	9.959890, -2	0.000000, 0	9.959890, -2	214
0.78	9.089128, -2	1.196699, -1	0.000000, 0	1.196699, -1	240
0.79	9.149460, -2	1.390284, -1	0.000000, 0	1.390284, -1	259
0.80	1.400314, -1	1.663289, -1	0.000000, 0	1.663289, -1	236
0.81	1.703996, -1	1.722665, -1	0.000000, 0	1.722665, -1	215
0.82	1.890093, -1	2.321758, -1	0.000000, 0	2.321758, -1	292
0.83	1.493933, -1	1.995050, -1	0.000000, 0	1.995050, -1	229
0.84	1.950643, -1	2.475877, -1	0.000000, 0	2.475877, -1	168
0.85	2.340021, -1	3.403767, -1	0.000000, 0	3.403767, -1	139
0.86	4.120883, -1	3.621507, -1	0.000000, 0	3.621507, -1	166
0.87	2.241288, -1	2.046055, -1	0.000000, 0	2.046055, -1	127
0.88	4.328830, -1	5.011136, -1	0.000000, 0	5.011136, -1	133
0.89	5.134860, -1	6.074806, -1	0.000000, 0	6.074806, -1	110
0.90	3.751399, -1	2.957680, -1	0.000000, 0	2.957680, -1	88
0.91	6.056099, -1	7.108296, -1	0.000000, 0	7.108296, -1	76
0.92	7.028011, -1	8.004365, -1	0.000000, 0	8.004365, -1	79
0.93	7.297300, -1	7.578362, -1	0.000000, 0	7.578362, -1	64
0.94	6.537980, -1	6.113301, -1	0.000000, 0	6.113301, -1	61
0.95	8.955730, -1	5.787943, -1	0.000000, 0	5.787943, -1	52
0.96	5.395294, -1	5.479901, -1	0.000000, 0	5.479901, -1	31
0.97	7.925003, -1	7.303622, -1	0.000000, 0	7.303622, -1	20
0.98	1.020717, -1	6.031406, -2	0.000000, 0	6.031406, -2	13
0.99	1.622351, -1	7.374195, -2	0.000000, 0	7.374195, -2	10
1.00	0.000000, 0	0.000000, 0	0.000000, 0	0.000000, 0	1

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

CUMULATIVE BAYESIAN POSTERIOR DISTRIBUTION

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.01	0.000000, 0	0.000000, 0	0.000000, 0	0.000000, 0	0
0.02	7.250818, -30	1.928240, -30	1.973948, -27	3.468122, -30	0
0.03	2.003098, -26	7.684606, -26	2.180812, -25	7.695635, -26	48
0.04	2.995240, -24	3.837647, -23	5.153564, -24	3.835053, -23	63
0.05	3.491279, -22	1.179239, -20	1.385878, -23	1.178319, -20	160
0.06	9.995908, -21	9.015101, -20	1.771008, -22	9.008075, -20	103
0.07	2.484735, -19	7.899482, -18	6.384392, -22	7.893314, -18	111
0.08	1.652986, -18	4.819698, -17	6.275076, -21	4.815935, -17	136
0.09	5.564360, -17	1.385309, -15	6.275076, -21	1.384227, -15	183
0.10	7.652418, -16	1.833729, -14	6.275076, -21	1.832297, -14	111
0.11	3.750649, -14	3.489031, -13	5.442563, -16	3.486311, -13	28
0.12	1.513349, -13	2.316899, -12	9.494213, -16	2.315091, -12	64
0.13	5.529600, -13	6.732600, -12	2.644610, -15	6.727345, -12	84
0.14	1.342112, -12	1.287060, -11	3.753354, -15	1.286055, -11	102
0.15	4.926719, -12	4.099517, -11	4.475259, -15	4.096316, -11	208
0.16	1.226273, -11	6.939027, -11	1.567487, -14	6.933610, -11	135
0.17	3.465801, -11	1.789754, -10	1.567487, -14	1.788357, -10	117
0.18	8.577075, -11	4.358673, -10	3.414251, -14	4.355270, -10	127
0.19	2.219327, -10	9.174808, -10	9.776709, -14	9.167645, -10	162
0.20	4.828213, -10	1.725461, -9	9.776709, -14	1.724114, -9	134
0.21	1.280830, -9	3.664881, -9	9.776709, -14	3.662020, -9	178
0.22	3.089009, -9	7.476174, -9	2.019629, -11	7.470352, -9	132
0.23	5.537887, -9	1.471331, -8	3.111160, -11	1.470185, -8	166
0.24	1.076194, -8	2.782035, -8	3.111160, -11	2.779865, -8	132
0.25	1.754518, -8	4.422377, -8	3.111160, -11	4.418926, -8	171

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

CUMULATIVE BAYESIAN POSTERIOR DISTRIBUTION

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.26	2.948287, -8	6.279778, -8	1.340612, -10	6.274885, -8	171
0.27	4.688034, -8	9.839691, -8	1.688600, -10	9.832021, -8	219
0.28	7.914529, -8	1.513525, -7	1.688600, -10	1.512345, -7	246
0.29	1.308137, -7	2.395130, -7	4.900348, -10	2.393263, -7	354
0.30	1.966993, -7	3.503959, -7	4.900348, -10	3.501227, -7	211
0.31	3.269623, -7	5.093221, -7	1.603330, -8	5.089369, -7	192
0.32	5.181525, -7	7.522519, -7	1.603330, -8	7.516770, -7	219
0.33	8.097331, -7	1.103579, -6	1.603330, -8	1.102730, -6	198
0.34	1.248056, -6	1.638785, -6	1.603330, -8	1.637517, -6	288
0.35	1.837543, -6	2.425680, -6	1.603330, -8	2.423798, -6	298
0.36	2.741288, -6	3.512423, -6	1.603330, -8	3.509693, -6	264
0.37	4.040429, -6	5.077604, -6	1.603330, -8	5.073651, -6	373
0.38	5.638269, -6	7.466101, -6	1.603330, -8	7.460284, -6	310
0.39	8.028261, -6	1.034927, -5	1.603330, -8	1.034120, -5	336
0.40	1.150132, -5	1.468641, -5	1.603330, -8	1.467495, -5	364
0.41	1.608139, -5	2.073103, -5	1.603330, -8	2.071486, -5	441
0.42	2.211943, -5	2.883781, -5	1.603330, -8	2.881531, -5	450
0.43	3.094246, -5	3.994634, -5	1.603330, -8	3.991516, -5	311
0.44	4.229862, -5	5.554167, -5	1.603330, -8	5.549831, -5	354
0.45	5.590648, -5	7.380714, -5	1.603330, -8	7.374952, -5	325
0.46	7.417750, -5	9.871702, -5	1.603330, -8	9.863995, -5	309
0.47	9.737887, -5	1.320809, -4	1.603330, -8	1.319777, -4	330
0.48	1.254018, -4	1.723297, -4	1.603330, -8	1.721951, -4	357
0.49	1.573032, -4	2.122859, -4	1.603330, -8	2.121202, -4	331
0.50	1.994535, -4	2.576022, -4	1.603330, -8	2.574010, -4	305

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

CUMULATIVE BAYESIAN POSTERIOR DISTRIBUTION

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.51	2.544741, -4	3.157032, -4	1.603330, -8	3.154567, -4	291
0.52	3.268016, -4	3.935069, -4	1.603330, -8	3.931997, -4	354
0.53	4.141339, -4	4.883387, -4	1.603330, -8	4.879574, -4	350
0.54	5.192157, -4	6.052535, -4	1.603330, -8	6.047809, -4	326
0.55	6.634063, -4	7.544975, -4	1.603330, -8	7.539083, -4	337
0.56	8.471910, -4	9.448403, -4	1.603330, -8	9.441025, -4	380
0.57	1.076580, -3	1.177842, -3	1.603330, -8	1.176922, -3	336
0.58	1.336020, -3	1.432398, -3	1.603330, -8	1.431279, -3	394
0.59	1.659484, -3	1.724880, -3	1.603330, -8	1.723533, -3	324
0.60	2.061686, -3	2.107011, -3	1.603330, -8	2.105366, -3	370
0.61	2.581369, -3	2.589310, -3	1.603330, -8	2.587288, -3	300
0.62	3.189245, -3	3.158624, -3	1.603330, -8	3.156157, -3	304
0.63	3.912630, -3	3.885742, -3	1.603330, -8	3.882708, -3	370
0.64	4.891873, -3	4.759007, -3	1.603330, -8	4.755290, -3	333
0.65	6.071282, -3	5.830720, -3	1.603330, -8	5.826167, -3	325
0.66	7.503485, -3	7.119584, -3	1.603330, -8	7.114025, -3	291
0.67	9.161747, -3	8.647539, -3	1.603330, -8	8.640787, -3	256
0.68	1.112346, -2	1.056133, -2	1.603330, -8	1.055308, -2	370
0.69	1.346514, -2	1.278156, -2	1.603330, -8	1.277158, -2	255
0.70	1.633008, -2	1.535940, -2	1.603330, -8	1.534740, -2	249
0.71	1.988802, -2	1.860850, -2	1.603330, -8	1.859397, -2	234
0.72	2.382997, -2	2.251911, -2	1.603330, -8	2.250152, -2	222
0.73	2.868490, -2	2.730699, -2	1.603330, -8	2.728567, -2	339
0.74	3.443701, -2	3.283362, -2	1.603330, -8	3.280798, -2	291
0.75	4.094960, -2	3.921938, -2	1.603330, -8	3.918876, -2	241

PROGRAM 14.1 OVERALL RELIABILITY LIKELIHOOD FUNCTION

CUMULATIVE BAYESIAN POSTERIOR DISTRIBUTION

ROVERALL	AVERAGE	MAXIMUM	MINIMUM	MIDRANGE	NUMBER
0.76	4.869637, -2	4.683094, -2	1.603330, -8	4.679438, -2	260
0.77	5.764265, -2	5.619587, -2	1.603330, -8	5.615199, -2	214
0.78	6.822272, -2	6.760386, -2	1.603330, -8	6.755107, -2	240
0.79	8.018648, -2	8.054609, -2	1.603330, -8	8.048319, -2	259
0.80	9.388191, -2	9.496881, -2	1.603330, -8	9.489466, -2	236
0.81	1.100287, -1	1.126095, -1	1.603330, -8	1.125215, -1	215
0.82	1.285369, -1	1.327675, -1	1.603330, -8	1.326638, -1	292
0.83	1.488122, -1	1.553166, -1	1.603330, -8	1.551953, -1	229
0.84	1.728749, -1	1.821985, -1	1.603330, -8	1.820562, -1	168
0.85	2.011236, -1	2.112012, -1	1.603330, -8	2.110362, -1	139
0.86	2.363967, -1	2.481522, -1	1.603330, -8	2.479584, -1	166
0.87	2.736115, -1	2.863150, -1	1.603330, -8	2.860915, -1	127
0.88	3.153402, -1	3.315784, -1	1.603330, -8	3.313195, -1	133
0.89	3.614811, -1	3.841795, -1	1.603330, -8	3.838795, -1	110
0.90	4.131937, -1	4.406953, -1	1.603330, -8	4.403512, -1	88
0.91	4.788161, -1	4.998258, -1	1.603330, -8	4.994355, -1	76
0.92	5.481357, -1	5.736904, -1	1.603330, -8	5.732424, -1	79
0.93	6.220690, -1	6.483836, -1	1.603330, -8	6.478773, -1	64
0.94	7.005450, -1	7.267104, -1	1.603330, -8	7.261429, -1	61
0.95	7.880295, -1	8.052651, -1	1.603330, -8	8.046363, -1	52
0.96	8.621344, -1	8.795655, -1	1.603330, -8	8.788787, -1	31
0.97	9.299353, -1	9.422834, -1	1.603330, -8	9.415476, -1	20
0.98	9.710315, -1	9.806744, -1	1.603330, -8	9.799086, -1	13
0.99	9.959696, -1	9.979320, -1	2.340658, -1	9.973356, -1	10
1.00	1.000000	1.000000	1.000000	1.000000	1

BAYESIAN LOWER 90 PERCENT CONFIDENCE BOUND

AVERAGE = 0.80400 MAXIMUM = 0.80300 MID-RANGE = 0.80300

PROGRAM 14.2
BAYESIAN CONFIDENCE BOUND

PROGRAM 14.2

```
title
bayesian  confidence  bound

chapter 0

c>19
d>39
g>31
h>63
u>31
w>1000
x>19


i=0(1)16
read(ci)
repeat


go=0
ho=0
do=0
d17=1
d16=1
d33=0
h31=1
h32=1
h33=0.9375
h34=0.9086
h35=0.8717
h63=0

i=1(1)5
hi=i/10
repeat

i=6(1)11
hi=h(i-1)+0.05
repeat

i=12(1)30
hi=h(i-1)+0.01
repeat

i=1(1)31
gi=0log(hi)
gi=0exp(2ogi)
repeat


j=0

i=1(1)15
read(di)
a=di
jump 20

21)d(i+17)=d
repeat

j=1

i=4(1)30
a=hi
jump 20

22)h(i+32)=d
repeat
jump 23


20)a=0log(a)
a=-2a
b=0log(0.5a)
b=0exp(0.25b)
c=0exp(-0.5a)
d=1+a/2.5+aa/11.25+aaa/73.125
d=1.10326bcd
jump 21,j=0
jump 22

23)newline
1065,0,0,5.1
newline 2
space 22
caption
program 14.2  bayesian  confidence  bound
caption
  based  on  chi-squared  prior  distributions
```

```
newline 3
space 37
caption
r  performance   likelihood   cumulative prior probability
newline
newline

i=0(1)16
newline
space-40
print(di)1,4
space-6
print(ci)1,4
space-13
print(1-d(i+17))1,4
repeat

newline
1065,0,0,5.1
newline 2
space 22
caption
program 14.2  bayesian  confidence  bound
caption
  based  on  chi-squared  prior  distributions

newline 3
space 37
caption
r  functional   likelihood   cumulative prior probability

newline
newline

i=0(1)31
newline
space-40
print(hi)1,4
space-5
print(gi)1,4
space-13
print(1-h(i+32))1,4
repeat
```

```
newline
1065,0,0,5.1
newline 2
space 22
caption
program 14.2  bayesian  confidence  bound
caption
  based  on  chi-squared  prior  distributions

newline 3
space 52
caption
******  upper  bound  ******
newline 3
space 30
caption
cumulative  posterior  distribution  function
caption
  of  overall  reliability
newline 3

n=1
i=1(1)31
a=h(i+31)-h(i+32)
ui=0.5agi+0.5ag(i-1)
repeat

i=1(1)16
a=d(i+16)-d(i+17)
xi=0.5aci+0.5ac(i-1)
repeat

1)i=0(1)1000
wi=0
repeat


m=n+30
p=n+15
c=0
```

```
i=n(1)m
jump 2,0.000001>ui

j=n(1)p
k=n(1)p
l=n(1)p

a=hidjdkdl
b=uixjxkxl
q=øintpt(1000a+0.5)
wq=wq+b
c=c+b

repeat
repeat
repeat

2)repeat



wo=wo/c
i=1(1)1000
wi=w(i-1)+wi/c
repeat
in=10



i=0(10)990
j=i+9
space 16
k=i(1)j
print(k/1000)1,5
repeat
newline
space 16
k=i(1)j
print(wk)1,5
repeat
newline
newline

jump 60,i≠101n
```

```
newline
1065,0,0,5.1
newline 2
space 22
caption
program 14.2  bayesian  confidence  bound
caption
  based  on  chi-squared  prior  distributions

newline 3
space 52

jump 70,jn=1
caption
******  upper  bound  ******
jump 65

70)caption
******  lower  bound  ******

65)newline 3
space 30
caption
cumulative  posterior  distribution  function
caption
  of  overall  reliability
newline 3
in=in+10

60)repeat
```

```
r=o(1)1000
jump 8,wr≥o.1o
repeat

8)s=o
d=w(r-1)
newline 3
space 41
caption
bayesian 9o percent confidence bound


i=n(1)m
jump 9,o.ooooo1>ui
j=n(1)p
k=n(1)p
l=n(1)p

a=hidjdkdl
b=uixjxkxl
q=∅intpt(1ooοa+o.5)
jump 11,q=r

1o)repeat
repeat
repeat

9)repeat
jump 12

11)ws=a
w(s+1)=b/c
s=s+2
jump 1o

12)j=s-4

13)i=o
s=o(2)j
jump 14,w(s+2)≥ws
a=ws
b=w(s+1)
ws=w(s+2)
w(s+1)=w(s+3)
w(s+2)=a
w(s+3)=b
i=1

14)repeat


jump 13,i=1
j=j+2
i=o(2)j
d=d+w(i+1)
jump 4o,d≥o.1o
repeat
4o)print(wi)3,5

jump 101,n=o
n=o

newline
1065,o,o,5.1
newline 2
space 22
caption
program 14.2 bayesian confidence bound
caption
  based on chi-squared prior distributions

newline 3
space 52
caption
****** lower bound ******
newline 3
space 3o
caption
cumulative posterior distribution function
caption
  of overall reliability
newline 3

i=o(1)3o
ui=u(i+1)
repeat

i=o(1)15
xi=x(i+1)
repeat
```

```
jn=1
jump 1

101)end

close


0.0000    0.0001    0.0006    0.0029    0.0076
0.0373    0.0803
0.1341    0.1856    0.2119    0.2142    0.2028
0.1929    0.1601    0.0955    0.0474    0.0000


0.5000    0.5987    0.6915    0.7500
0.8500    0.9000
0.9350    0.9600    0.9750    0.9772    0.9878
0.9900    0.9938    0.9975    0.9990


***z

**********
```

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

R PERFORMANCE	LIKELIHOOD	CUMULATIVE PRIOR PROBABILITY
0.0000	0.0000	0.0000
0.5000	0.0001	0.1132
0.5987	0.0006	0.1510
0.6915	0.0029	0.1979
0.7500	0.0076	0.2351
0.8500	0.0373	0.3213
0.9000	0.0803	0.3843
0.9350	0.1341	0.4457
0.9600	0.1856	0.5081
0.9750	0.2119	0.5621
0.9772	0.2142	0.5720
0.9878	0.2028	0.6337
0.9900	0.1929	0.6514
0.9938	0.1601	0.6906
0.9975	0.0955	0.7533
0.9990	0.0474	0.8038
1.0000	0.0000	1.0000

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

R	FUNCTIONAL LIKELIHOOD	CUMULATIVE PRIOR PROBABILITY
0.0000	0.0000	0.0000
0.1000	0.0000	0.0625
0.2000	0.0000	0.0914
0.3000	0.0000	0.1283
0.4000	0.0000	0.0865
0.5000	0.0000	0.1132
0.5500	0.0000	0.1310
0.6000	0.0000	0.1516
0.6500	0.0002	0.1754
0.7000	0.0008	0.2029
0.7500	0.0032	0.2351
0.8000	0.0115	0.2736
0.8100	0.0148	0.2823
0.8200	0.0189	0.2913
0.8300	0.0241	0.3008
0.8400	0.0306	0.3108
0.8500	0.0388	0.3213
0.8600	0.0490	0.3324
0.8700	0.0617	0.3441
0.8800	0.0776	0.3566
0.8900	0.0972	0.3700
0.9000	0.1216	0.3843
0.9100	0.1516	0.3998
0.9200	0.1887	0.4168
0.9300	0.2342	0.4355
0.9400	0.2901	0.4564
0.9500	0.3585	0.4803
0.9600	0.4420	0.5081
0.9700	0.5438	0.5419
0.9800	0.6676	0.5857
0.9900	0.8179	0.6514
1.0000	1.0000	1.0000

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.00000	0.00100	0.00200	0.00300	0.00400	0.00500	0.00600	0.00700	0.00800	0.00900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.01000	0.01100	0.01200	0.01300	0.01400	0.01500	0.01600	0.01700	0.01800	0.01900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.02000	0.02100	0.02200	0.02300	0.02400	0.02500	0.02600	0.02700	0.02800	0.02900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.03000	0.03100	0.03200	0.03300	0.03400	0.03500	0.03600	0.03700	0.03800	0.03900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.04000	0.04100	0.04200	0.04300	0.04400	0.04500	0.04600	0.04700	0.04800	0.04900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.05000	0.05100	0.05200	0.05300	0.05400	0.05500	0.05600	0.05700	0.05800	0.05900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.06000	0.06100	0.06200	0.06300	0.06400	0.06500	0.06600	0.06700	0.06800	0.06900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.07000	0.07100	0.07200	0.07300	0.07400	0.07500	0.07600	0.07700	0.07800	0.07900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.08000	0.08100	0.08200	0.08300	0.08400	0.08500	0.08600	0.08700	0.08800	0.08900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.09000	0.09100	0.09200	0.09300	0.09400	0.09500	0.09600	0.09700	0.09800	0.09900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.10000	0.10100	0.10200	0.10300	0.10400	0.10500	0.10600	0.10700	0.10800	0.10900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.11000	0.11100	0.11200	0.11300	0.11400	0.11500	0.11600	0.11700	0.11800	0.11900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.12000	0.12100	0.12200	0.12300	0.12400	0.12500	0.12600	0.12700	0.12800	0.12900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.13000	0.13100	0.13200	0.13300	0.13400	0.13500	0.13600	0.13700	0.13800	0.13900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.14000	0.14100	0.14200	0.14300	0.14400	0.14500	0.14600	0.14700	0.14800	0.14900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.15000	0.15100	0.15200	0.15300	0.15400	0.15500	0.15600	0.15700	0.15800	0.15900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.16000	0.16100	0.16200	0.16300	0.16400	0.16500	0.16600	0.16700	0.16800	0.16900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.17000	0.17100	0.17200	0.17300	0.17400	0.17500	0.17600	0.17700	0.17800	0.17900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.18000	0.18100	0.18200	0.18300	0.18400	0.18500	0.18600	0.18700	0.18800	0.18900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.19000	0.19100	0.19200	0.19300	0.19400	0.19500	0.19600	0.19700	0.19800	0.19900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.20000	0.20100	0.20200	0.20300	0.20400	0.20500	0.20600	0.20700	0.20800	0.20900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.21000	0.21100	0.21200	0.21300	0.21400	0.21500	0.21600	0.21700	0.21800	0.21900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.22000	0.22100	0.22200	0.22300	0.22400	0.22500	0.22600	0.22700	0.22800	0.22900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.23000	0.23100	0.23200	0.23300	0.23400	0.23500	0.23600	0.23700	0.23800	0.23900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.24000	0.24100	0.24200	0.24300	0.24400	0.24500	0.24600	0.24700	0.24800	0.24900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.25000	0.25100	0.25200	0.25300	0.25400	0.25500	0.25600	0.25700	0.25800	0.25900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.26000	0.26100	0.26200	0.26300	0.26400	0.26500	0.26600	0.26700	0.26800	0.26900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.27000	0.27100	0.27200	0.27300	0.27400	0.27500	0.27600	0.27700	0.27800	0.27900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.28000	0.28100	0.28200	0.28300	0.28400	0.28500	0.28600	0.28700	0.28800	0.28900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.29000	0.29100	0.29200	0.29300	0.29400	0.29500	0.29600	0.29700	0.29800	0.29900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.30000	0.30100	0.30200	0.30300	0.30400	0.30500	0.30600	0.30700	0.30800	0.30900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.31000	0.31100	0.31200	0.31300	0.31400	0.31500	0.31600	0.31700	0.31800	0.31900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.32000	0.32100	0.32200	0.32300	0.32400	0.32500	0.32600	0.32700	0.32800	0.32900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.33000	0.33100	0.33200	0.33300	0.33400	0.33500	0.33600	0.33700	0.33800	0.33900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.34000	0.34100	0.34200	0.34300	0.34400	0.34500	0.34600	0.34700	0.34800	0.34900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.35000	0.35100	0.35200	0.35300	0.35400	0.35500	0.35600	0.35700	0.35800	0.35900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.36000	0.36100	0.36200	0.36300	0.36400	0.36500	0.36600	0.36700	0.36800	0.36900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.37000	0.37100	0.37200	0.37300	0.37400	0.37500	0.37600	0.37700	0.37800	0.37900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.38000	0.38100	0.38200	0.38300	0.38400	0.38500	0.38600	0.38700	0.38800	0.38900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
0.39000	0.39100	0.39200	0.39300	0.39400	0.39500	0.39600	0.39700	0.39800	0.39900
0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00001	0.00001
0.40000	0.40100	0.40200	0.40300	0.40400	0.40500	0.40600	0.40700	0.40800	0.40900
0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.41000	0.41100	0.41200	0.41300	0.41400	0.41500	0.41600	0.41700	0.41800	0.41900
0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001	0.00001
0.42000	0.42100	0.42200	0.42300	0.42400	0.42500	0.42600	0.42700	0.42800	0.42900
0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002	0.00002
0.43000	0.43100	0.43200	0.43300	0.43400	0.43500	0.43600	0.43700	0.43800	0.43900
0.00002	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00003	0.00004
0.44000	0.44100	0.44200	0.44300	0.44400	0.44500	0.44600	0.44700	0.44800	0.44900
0.00004	0.00004	0.00004	0.00004	0.00004	0.00005	0.00005	0.00005	0.00005	0.00006
0.45000	0.45100	0.45200	0.45300	0.45400	0.45500	0.45600	0.45700	0.45800	0.45900
0.00006	0.00006	0.00006	0.00006	0.00006	0.00006	0.00007	0.00007	0.00007	0.00007
0.46000	0.46100	0.46200	0.46300	0.46400	0.46500	0.46600	0.46700	0.46800	0.46900
0.00007	0.00008	0.00008	0.00009	0.00009	0.00009	0.00010	0.00010	0.00011	0.00011
0.47000	0.47100	0.47200	0.47300	0.47400	0.47500	0.47600	0.47700	0.47800	0.47900
0.00011	0.00012	0.00012	0.00012	0.00013	0.00014	0.00014	0.00015	0.00015	0.00015
0.48000	0.48100	0.48200	0.48300	0.48400	0.48500	0.48600	0.48700	0.48800	0.48900
0.00016	0.00016	0.00017	0.00018	0.00018	0.00019	0.00019	0.00020	0.00021	0.00022
0.49000	0.49100	0.49200	0.49300	0.49400	0.49500	0.49600	0.49700	0.49800	0.49900
0.00022	0.00022	0.00023	0.00024	0.00024	0.00025	0.00025	0.00026	0.00026	0.00027
0.50000	0.50100	0.50200	0.50300	0.50400	0.50500	0.50600	0.50700	0.50800	0.50900
0.00027	0.00027	0.00027	0.00028	0.00028	0.00028	0.00029	0.00029	0.00029	0.00030

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.51000	0.51100	0.51200	0.51300	0.51400	0.51500	0.51600	0.51700	0.51800	0.51900
0.00030	0.00030	0.00030	0.00030	0.00030	0.00031	0.00031	0.00032	0.00032	0.00032
0.52000	0.52100	0.52200	0.52300	0.52400	0.52500	0.52600	0.52700	0.52800	0.52900
0.00032	0.00032	0.00032	0.00033	0.00033	0.00034	0.00034	0.00034	0.00035	0.00035
0.53000	0.53100	0.53200	0.53300	0.53400	0.53500	0.53600	0.53700	0.53800	0.53900
0.00035	0.00036	0.00037	0.00037	0.00037	0.00038	0.00038	0.00040	0.00040	0.00040
0.54000	0.54100	0.54200	0.54300	0.54400	0.54500	0.54600	0.54700	0.54800	0.54900
0.00041	0.00041	0.00042	0.00042	0.00042	0.00043	0.00044	0.00045	0.00045	0.00046
0.55000	0.55100	0.55200	0.55300	0.55400	0.55500	0.55600	0.55700	0.55800	0.55900
0.00047	0.00047	0.00048	0.00050	0.00051	0.00051	0.00053	0.00053	0.00054	0.00055
0.56000	0.56100	0.56200	0.56300	0.56400	0.56500	0.56600	0.56700	0.56800	0.56900
0.00058	0.00058	0.00060	0.00060	0.00062	0.00063	0.00063	0.00064	0.00066	0.00068
0.57000	0.57100	0.57200	0.57300	0.57400	0.57500	0.57600	0.57700	0.57800	0.57900
0.00069	0.00071	0.00072	0.00075	0.00078	0.00079	0.00080	0.00082	0.00084	0.00085
0.58000	0.58100	0.58200	0.58300	0.58400	0.58500	0.58600	0.58700	0.58800	0.58900
0.00087	0.00089	0.00094	0.00095	0.00099	0.00100	0.00102	0.00103	0.00106	0.00107
0.59000	0.59100	0.59200	0.59300	0.59400	0.59500	0.59600	0.59700	0.59800	0.59900
0.00109	0.00112	0.00113	0.00114	0.00116	0.00117	0.00121	0.00125	0.00126	0.00127
0.60000	0.60100	0.60200	0.60300	0.60400	0.60500	0.60600	0.60700	0.60800	0.60900
0.00128	0.00129	0.00130	0.00131	0.00132	0.00135	0.00136	0.00140	0.00144	0.00145

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.61000	0.61100	0.61200	0.61300	0.61400	0.61500	0.61600	0.61700	0.61800	0.61900
0.00146	0.00148	0.00153	0.00154	0.00156	0.00162	0.00165	0.00166	0.00169	0.00171
0.62000	0.62100	0.62200	0.62300	0.62400	0.62500	0.62600	0.62700	0.62800	0.62900
0.00172	0.00182	0.00189	0.00192	0.00194	0.00196	0.00198	0.00200	0.00202	0.00203
0.63000	0.63100	0.63200	0.63300	0.63400	0.63500	0.63600	0.63700	0.63800	0.63900
0.00216	0.00224	0.00228	0.00230	0.00235	0.00236	0.00242	0.00252	0.00253	0.00262
0.64000	0.64100	0.64200	0.64300	0.64400	0.64500	0.64600	0.64700	0.64800	0.64900
0.00267	0.00269	0.00273	0.00279	0.00282	0.00288	0.00293	0.00308	0.00316	0.00323
0.65000	0.65100	0.65200	0.65300	0.65400	0.65500	0.65600	0.65700	0.65800	0.65900
0.00332	0.00335	0.00338	0.00343	0.00347	0.00349	0.00368	0.00379	0.00389	0.00395
0.66000	0.66100	0.66200	0.66300	0.66400	0.66500	0.66600	0.66700	0.66800	0.66900
0.00407	0.00412	0.00422	0.00429	0.00436	0.00440	0.00457	0.00476	0.00484	0.00491
0.67000	0.67100	0.67200	0.67300	0.67400	0.67500	0.67600	0.67700	0.67800	0.67900
0.00500	0.00508	0.00515	0.00545	0.00560	0.00575	0.00598	0.00603	0.00606	0.00619
0.68000	0.68100	0.68200	0.68300	0.68400	0.68500	0.68600	0.68700	0.68800	0.68900
0.00628	0.00639	0.00649	0.00664	0.00684	0.00696	0.00702	0.00716	0.00729	0.00743
0.69000	0.69100	0.69200	0.69300	0.69400	0.69500	0.69600	0.69700	0.69800	0.69900
0.00755	0.00771	0.00776	0.00798	0.00830	0.00838	0.00841	0.00860	0.00865	0.00884
0.70000	0.70100	0.70200	0.70300	0.70400	0.70500	0.70600	0.70700	0.70800	0.70900
0.00889	0.00911	0.00936	0.00942	0.00977	0.00983	0.00995	0.01005	0.01024	0.01032

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.71000	0.71100	0.71200	0.71300	0.71400	0.71500	0.71600	0.71700	0.71800	0.71900
0.01038	0.01075	0.01085	0.01113	0.01143	0.01214	0.01237	0.01248	0.01285	0.01303
0.72000	0.72100	0.72200	0.72300	0.72400	0.72500	0.72600	0.72700	0.72800	0.72900
0.01323	0.01346	0.01393	0.01411	0.01436	0.01450	0.01458	0.01405	0.01507	0.01543
0.73000	0.73100	0.73200	0.73300	0.73400	0.73500	0.73600	0.73700	0.73800	0.73900
0.01556	0.01588	0.01619	0.01649	0.01731	0.01743	0.01778	0.01789	0.01819	0.01846
0.74000	0.74100	0.74200	0.74300	0.74400	0.74500	0.74600	0.74700	0.74800	0.74900
0.01877	0.01917	0.01939	0.02002	0.02016	0.02040	0.02139	0.02159	0.02220	0.02233
0.75000	0.75100	0.75200	0.75300	0.75400	0.75500	0.75600	0.75700	0.75800	0.75900
0.02263	0.02276	0.02292	0.02313	0.02333	0.02380	0.02486	0.02575	0.02596	0.02620
0.76000	0.76100	0.76200	0.76300	0.76400	0.76500	0.76600	0.76700	0.76800	0.76900
0.02688	0.02708	0.02733	0.02945	0.02988	0.03037	0.03061	0.03104	0.03129	0.03165
0.77000	0.77100	0.77200	0.77300	0.77400	0.77500	0.77600	0.77700	0.77800	0.77900
0.03198	0.03233	0.03257	0.03282	0.03314	0.03464	0.03517	0.03597	0.03689	0.03744
0.78000	0.78100	0.78200	0.78300	0.78400	0.78500	0.78600	0.78700	0.78800	0.78900
0.03781	0.03817	0.03871	0.03989	0.04039	0.04245	0.04292	0.04442	0.04512	0.04551
0.79000	0.79100	0.79200	0.79300	0.79400	0.79500	0.79600	0.79700	0.79800	0.79900
0.04767	0.04794	0.04886	0.05012	0.05120	0.05209	0.05474	0.05556	0.05643	0.05682
0.80000	0.80100	0.80200	0.80300	0.80400	0.80500	0.80600	0.80700	0.80800	0.80900
0.05882	0.05917	0.06012	0.06065	0.06133	0.06223	0.06571	0.06620	0.07145	0.07226

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.81000	0.81100	0.81200	0.81300	0.81400	0.81500	0.81600	0.81700	0.81800	0.81900
0.07391	0.07578	0.07693	0.07745	0.07982	0.08145	0.08281	0.08386	0.08459	0.08791
0.82000	0.82100	0.82200	0.82300	0.82400	0.82500	0.82600	0.82700	0.82800	0.82900
0.09270	0.09380	0.09500	0.09651	0.09838	0.09945	0.10036	0.10277	0.10459	0.11014
0.83000	0.83100	0.83200	0.83300	0.83400	0.83500	0.83600	0.83700	0.83800	0.83900
0.11104	0.11669	0.11744	0.11925	0.12233	0.12284	0.12635	0.12709	0.12991	0.13673
0.84000	0.84100	0.84200	0.84300	0.84400	0.84500	0.84600	0.84700	0.84800	0.84900
0.13865	0.14062	0.14686	0.14861	0.15103	0.15303	0.15478	0.15651	0.15808	0.15986
0.85000	0.85100	0.85200	0.85300	0.85400	0.85500	0.85600	0.85700	0.85800	0.85900
0.16084	0.16226	0.16520	0.17181	0.17272	0.17597	0.17892	0.18062	0.18288	0.18608
0.86000	0.86100	0.86200	0.86300	0.86400	0.86500	0.86600	0.86700	0.86800	0.86900
0.18827	0.18917	0.19662	0.19938	0.20481	0.20687	0.20891	0.21545	0.21674	0.22317
0.87000	0.87100	0.87200	0.87300	0.87400	0.87500	0.87600	0.87700	0.87800	0.87900
0.22411	0.22630	0.23164	0.23382	0.23665	0.24839	0.24968	0.25442	0.26226	0.26410
0.88000	0.88100	0.88200	0.88300	0.88400	0.88500	0.88600	0.88700	0.88800	0.88900
0.26829	0.26970	0.27181	0.27396	0.27871	0.28286	0.28446	0.29801	0.30179	0.31341
0.89000	0.89100	0.89200	0.89300	0.89400	0.89500	0.89600	0.89700	0.89800	0.89900
0.31616	0.32077	0.32928	0.33096	0.33547	0.34184	0.34463	0.35006	0.35568	0.36340
0.90000	0.90100	0.90200	0.90300	0.90400	0.90500	0.90600	0.90700	0.90800	0.90900
0.36577	0.37857	0.38029	0.38841	0.38969	0.39229	0.39981	0.40138	0.40428	0.41213

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** UPPER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.91000	0.91100	0.91200	0.91300	0.91400	0.91500	0.91600	0.91700	0.91800	0.91900
0.42032	0.42575	0.43902	0.44712	0.45332	0.45967	0.46493	0.46723	0.47583	0.48115
0.92000	0.92100	0.92200	0.92300	0.92400	0.92500	0.92600	0.92700	0.92800	0.92900
0.48542	0.49623	0.50032	0.50859	0.51557	0.53183	0.53481	0.55084	0.55416	0.56094
0.93000	0.93100	0.93200	0.93300	0.93400	0.93500	0.93600	0.93700	0.93800	0.93900
0.57245	0.57381	0.57975	0.58528	0.59740	0.60385	0.61326	0.62324	0.62683	0.64174
0.94000	0.94100	0.94200	0.94300	0.94400	0.94500	0.94600	0.94700	0.94800	0.94900
0.64333	0.65160	0.66347	0.66564	0.66887	0.67678	0.68942	0.69708	0.71546	0.71787
0.95000	0.95100	0.95200	0.95300	0.95400	0.95500	0.95600	0.95700	0.95800	0.95900
0.72549	0.73947	0.74700	0.75935	0.76578	0.77051	0.77443	0.78838	0.79408	0.80117
0.96000	0.96100	0.96200	0.96300	0.96400	0.96500	0.96600	0.96700	0.96800	0.96900
0.80444	0.81663	0.82334	0.83902	0.84662	0.85220	0.85759	0.86465	0.86909	0.87516
0.97000	0.97100	0.97200	0.97300	0.97400	0.97500	0.97600	0.97700	0.97800	0.97900
0.88510	0.88667	0.89471	0.90710	0.91029	0.92098	0.92849	0.93110	0.93528	0.94318
0.98000	0.98100	0.98200	0.98300	0.98400	0.98500	0.98600	0.98700	0.98800	0.98900
0.94385	0.94945	0.95425	0.95962	0.96481	0.97296	0.97388	0.97817	0.98243	0.98533
0.99000	0.99100	0.99200	0.99300	0.99400	0.99500	0.99600	0.99700	0.99800	0.99900
0.98776	0.99036	0.99082	0.99286	0.99478	0.99629	0.99682	0.99913	0.99944	0.99983

BAYESIAN 90 PERCENT CONFIDENCE BOUND 0.82608

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.00000	0.00100	0.00200	0.00300	0.00400	0.00500	0.00600	0.00700	0.00800	0.00900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.01000	0.01100	0.01200	0.01300	0.01400	0.01500	0.01600	0.01700	0.01800	0.01900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.02000	0.02100	0.02200	0.02300	0.02400	0.02500	0.02600	0.02700	0.02800	0.02900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.03000	0.03100	0.03200	0.03300	0.03400	0.03500	0.03600	0.03700	0.03800	0.03900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.04000	0.04100	0.04200	0.04300	0.04400	0.04500	0.04600	0.04700	0.04800	0.04900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.05000	0.05100	0.05200	0.05300	0.05400	0.05500	0.05600	0.05700	0.05800	0.05900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.06000	0.06100	0.06200	0.06300	0.06400	0.06500	0.06600	0.06700	0.06800	0.06900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.07000	0.07100	0.07200	0.07300	0.07400	0.07500	0.07600	0.07700	0.07800	0.07900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.08000	0.08100	0.08200	0.08300	0.08400	0.08500	0.08600	0.08700	0.08800	0.08900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.09000	0.09100	0.09200	0.09300	0.09400	0.09500	0.09600	0.09700	0.09800	0.09900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.10000	0.10100	0.10200	0.10300	0.10400	0.10500	0.10600	0.10700	0.10800	0.10900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.11000	0.11100	0.11200	0.11300	0.11400	0.11500	0.11600	0.11700	0.11800	0.11900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.12000	0.12100	0.12200	0.12300	0.12400	0.12500	0.12600	0.12700	0.12800	0.12900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.13000	0.13100	0.13200	0.13300	0.13400	0.13500	0.13600	0.13700	0.13800	0.13900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.14000	0.14100	0.14200	0.14300	0.14400	0.14500	0.14600	0.14700	0.14800	0.14900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.15000	0.15100	0.15200	0.15300	0.15400	0.15500	0.15600	0.15700	0.15800	0.15900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.16000	0.16100	0.16200	0.16300	0.16400	0.16500	0.16600	0.16700	0.16800	0.16900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.17000	0.17100	0.17200	0.17300	0.17400	0.17500	0.17600	0.17700	0.17800	0.17900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.18000	0.18100	0.18200	0.18300	0.18400	0.18500	0.18600	0.18700	0.18800	0.18900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.19000	0.19100	0.19200	0.19300	0.19400	0.19500	0.19600	0.19700	0.19800	0.19900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.20000	0.20100	0.20200	0.20300	0.20400	0.20500	0.20600	0.20700	0.20800	0.20900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.21000	0.21100	0.21200	0.21300	0.21400	0.21500	0.21600	0.21700	0.21800	0.21900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.22000	0.22100	0.22200	0.22300	0.22400	0.22500	0.22600	0.22700	0.22800	0.22900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.23000	0.23100	0.23200	0.23300	0.23400	0.23500	0.23600	0.23700	0.23800	0.23900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.24000	0.24100	0.24200	0.24300	0.24400	0.24500	0.24600	0.24700	0.24800	0.24900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.25000	0.25100	0.25200	0.25300	0.25400	0.25500	0.25600	0.25700	0.25800	0.25900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.26000	0.26100	0.26200	0.26300	0.26400	0.26500	0.26600	0.26700	0.26800	0.26900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.27000	0.27100	0.27200	0.27300	0.27400	0.27500	0.27600	0.27700	0.27800	0.27900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.28000	0.28100	0.28200	0.28300	0.28400	0.28500	0.28600	0.28700	0.28800	0.28900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.29000	0.29100	0.29200	0.29300	0.29400	0.29500	0.29600	0.29700	0.29800	0.29900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.30000	0.30100	0.30200	0.30300	0.30400	0.30500	0.30600	0.30700	0.30800	0.30900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.31000	0.31100	0.31200	0.31300	0.31400	0.31500	0.31600	0.31700	0.31800	0.31900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.32000	0.32100	0.32200	0.32300	0.32400	0.32500	0.32600	0.32700	0.32800	0.32900
0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023	0.00023
0.33000	0.33100	0.33200	0.33300	0.33400	0.33500	0.33600	0.33700	0.33800	0.33900
0.00023	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024
0.34000	0.34100	0.34200	0.34300	0.34400	0.34500	0.34600	0.34700	0.34800	0.34900
0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00024	0.00025	0.00025	0.00025
0.35000	0.35100	0.35200	0.35300	0.35400	0.35500	0.35600	0.35700	0.35800	0.35900
0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00025	0.00026	0.00026	0.00026
0.36000	0.36100	0.36200	0.36300	0.36400	0.36500	0.36600	0.36700	0.36800	0.36900
0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00026	0.00027	0.00027	0.00027
0.37000	0.37100	0.37200	0.37300	0.37400	0.37500	0.37600	0.37700	0.37800	0.37900
0.00027	0.00028	0.00028	0.00028	0.00028	0.00028	0.00028	0.00028	0.00029	0.00029
0.38000	0.38100	0.38200	0.38300	0.38400	0.38500	0.38600	0.38700	0.38800	0.38900
0.00029	0.00029	0.00029	0.00029	0.00029	0.00030	0.00030	0.00030	0.00030	0.00030
0.39000	0.39100	0.39200	0.39300	0.39400	0.39500	0.39600	0.39700	0.39800	0.39900
0.00030	0.00030	0.00031	0.00031	0.00031	0.00032	0.00032	0.00032	0.00032	0.00032
0.40000	0.40100	0.40200	0.40300	0.40400	0.40500	0.40600	0.40700	0.40800	0.40900
0.00034	0.00034	0.00034	0.00035	0.00035	0.00036	0.00036	0.00036	0.00036	0.00037

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.41000	0.41100	0.41200	0.41300	0.41400	0.41500	0.41600	0.41700	0.41800	0.41900
0.00037	0.00038	0.00038	0.00039	0.00039	0.00039	0.00041	0.00043	0.00044	0.00045
0.42000	0.42100	0.42200	0.42300	0.42400	0.42500	0.42600	0.42700	0.42800	0.42900
0.00045	0.00046	0.00046	0.00046	0.00047	0.00047	0.00047	0.00049	0.00051	0.00052
0.43000	0.43100	0.43200	0.43300	0.43400	0.43500	0.43600	0.43700	0.43800	0.43900
0.00052	0.00053	0.00053	0.00054	0.00057	0.00059	0.00060	0.00061	0.00061	0.00062
0.44000	0.44100	0.44200	0.44300	0.44400	0.44500	0.44600	0.44700	0.44800	0.44900
0.00064	0.00065	0.00067	0.00069	0.00071	0.00072	0.00072	0.00073	0.00073	0.00074
0.45000	0.45100	0.45200	0.45300	0.45400	0.45500	0.45600	0.45700	0.45800	0.45900
0.00074	0.00075	0.00077	0.00080	0.00081	0.00081	0.00083	0.00084	0.00085	0.00086
0.46000	0.46100	0.46200	0.46300	0.46400	0.46500	0.46600	0.46700	0.46800	0.46900
0.00088	0.00088	0.00093	0.00094	0.00097	0.00097	0.00098	0.00099	0.00100	0.00102
0.47000	0.47100	0.47200	0.47300	0.47400	0.47500	0.47600	0.47700	0.47800	0.47900
0.00104	0.00108	0.00110	0.00119	0.00120	0.00122	0.00123	0.00124	0.00126	0.00128
0.48000	0.48100	0.48200	0.48300	0.48400	0.48500	0.48600	0.48700	0.48800	0.48900
0.00135	0.00137	0.00138	0.00140	0.00145	0.00146	0.00148	0.00150	0.00152	0.00154
0.49000	0.49100	0.49200	0.49300	0.49400	0.49500	0.49600	0.49700	0.49800	0.49900
0.00155	0.00158	0.00163	0.00169	0.00171	0.00173	0.00176	0.00178	0.00180	0.00188
0.50000	0.50100	0.50200	0.50300	0.50400	0.50500	0.50600	0.50700	0.50800	0.50900
0.00190	0.00206	0.00213	0.00217	0.00217	0.00220	0.00221	0.00224	0.00229	0.00230

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.51000	0.51100	0.51200	0.51300	0.51400	0.51500	0.51600	0.51700	0.51800	0.51900
0.00235	0.00237	0.00245	0.00249	0.00251	0.00255	0.00257	0.00259	0.00266	0.00267
0.52000	0.52100	0.52200	0.52300	0.52400	0.52500	0.52600	0.52700	0.52800	0.52900
0.00270	0.00298	0.00300	0.00302	0.00310	0.00312	0.00314	0.00319	0.00327	0.00331
0.53000	0.53100	0.53200	0.53300	0.53400	0.53500	0.53600	0.53700	0.53800	0.53900
0.00337	0.00341	0.00354	0.00360	0.00362	0.00385	0.00402	0.00405	0.00406	0.00415
0.54000	0.54100	0.54200	0.54300	0.54400	0.54500	0.54600	0.54700	0.54800	0.54900
0.00420	0.00422	0.00436	0.00443	0.00477	0.00483	0.00491	0.00497	0.00502	0.00511
0.55000	0.55100	0.55200	0.55300	0.55400	0.55500	0.55600	0.55700	0.55800	0.55900
0.00521	0.00548	0.00549	0.00571	0.00578	0.00593	0.00616	0.00623	0.00625	0.00636
0.56000	0.56100	0.56200	0.56300	0.56400	0.56500	0.56600	0.56700	0.56800	0.56900
0.00641	0.00644	0.00658	0.00668	0.00672	0.00684	0.00695	0.00700	0.00760	0.00772
0.57000	0.57100	0.57200	0.57300	0.57400	0.57500	0.57600	0.57700	0.57800	0.57900
0.00779	0.00782	0.00795	0.00806	0.00812	0.00818	0.00847	0.00853	0.00871	0.00881
0.58000	0.58100	0.58200	0.58300	0.58400	0.58500	0.58600	0.58700	0.58800	0.58900
0.00890	0.00902	0.00906	0.00916	0.00932	0.00940	0.00950	0.00955	0.00967	0.00973
0.59000	0.59100	0.59200	0.59300	0.59400	0.59500	0.59600	0.59700	0.59800	0.59900
0.01054	0.01071	0.01080	0.01086	0.01097	0.01106	0.01115	0.01119	0.01138	0.01142
0.60000	0.60100	0.60200	0.60300	0.60400	0.60500	0.60600	0.60700	0.60800	0.60900
0.01165	0.01213	0.01238	0.01246	0.01258	0.01264	0.01357	0.01362	0.01382	0.01395

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.61000	0.61100	0.61200	0.61300	0.61400	0.61500	0.61600	0.61700	0.61800	0.61900
0.01413	0.01434	0.01462	0.01473	0.01497	0.01527	0.01543	0.01649	0.01657	0.01695
0.62000	0.62100	0.62200	0.62300	0.62400	0.62500	0.62600	0.62700	0.62800	0.62900
0.01705	0.01720	0.01731	0.01770	0.01788	0.01997	0.02007	0.02081	0.02087	0.02111
0.63000	0.63100	0.63200	0.63300	0.63400	0.63500	0.63600	0.63700	0.63800	0.63900
0.02182	0.02203	0.02216	0.02241	0.02261	0.02290	0.02323	0.02348	0.02360	0.02374
0.64000	0.64100	0.64200	0.64300	0.64400	0.64500	0.64600	0.64700	0.64800	0.64900
0.02408	0.02421	0.02600	0.02622	0.02690	0.02701	0.02749	0.02770	0.02783	0.02899
0.65000	0.65100	0.65200	0.65300	0.65400	0.65500	0.65600	0.65700	0.65800	0.65900
0.02909	0.02953	0.02994	0.03213	0.03251	0.03278	0.03298	0.03333	0.03365	0.03378
0.66000	0.66100	0.66200	0.66300	0.66400	0.66500	0.66600	0.66700	0.66800	0.66900
0.03473	0.03515	0.03644	0.03659	0.03775	0.03838	0.04073	0.04136	0.04235	0.04330
0.67000	0.67100	0.67200	0.67300	0.67400	0.67500	0.67600	0.67700	0.67800	0.67900
0.04356	0.04370	0.04435	0.04476	0.04496	0.04535	0.04577	0.04656	0.04917	0.04948
0.68000	0.68100	0.68200	0.68300	0.68400	0.68500	0.68600	0.68700	0.68800	0.68900
0.05025	0.05039	0.05161	0.05206	0.05335	0.05355	0.05444	0.05702	0.05734	0.05757
0.69000	0.69100	0.69200	0.69300	0.69400	0.69500	0.69600	0.69700	0.69800	0.69900
0.05974	0.06003	0.06037	0.06119	0.06259	0.06340	0.06355	0.06680	0.06704	0.06851
0.70000	0.70100	0.70200	0.70300	0.70400	0.70500	0.70600	0.70700	0.70800	0.70900
0.06875	0.06956	0.07007	0.07032	0.07157	0.07196	0.07365	0.07488	0.07969	0.08165

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.71000	0.71100	0.71200	0.71300	0.71400	0.71500	0.71600	0.71700	0.71800	0.71900
0.08204	0.08385	0.08527	0.08574	0.08634	0.08702	0.08741	0.08878	0.09107	0.09181
0.72000	0.72100	0.72200	0.72300	0.72400	0.72500	0.72600	0.72700	0.72800	0.72900
0.09239	0.09469	0.09576	0.09623	0.09748	0.09926	0.10008	0.10317	0.10403	0.10476
0.73000	0.73100	0.73200	0.73300	0.73400	0.73500	0.73600	0.73700	0.73800	0.73900
0.10528	0.10659	0.10729	0.10941	0.11027	0.11082	0.11346	0.11443	0.11532	0.11564
0.74000	0.74100	0.74200	0.74300	0.74400	0.74500	0.74600	0.74700	0.74800	0.74900
0.11983	0.12038	0.12122	0.12148	0.12178	0.12216	0.12278	0.12318	0.12500	0.12527
0.75000	0.75100	0.75200	0.75300	0.75400	0.75500	0.75600	0.75700	0.75800	0.75900
0.12954	0.12988	0.13026	0.13282	0.13332	0.13879	0.13895	0.14038	0.14095	0.14144
0.76000	0.76100	0.76200	0.76300	0.76400	0.76500	0.76600	0.76700	0.76800	0.76900
0.14200	0.14300	0.14377	0.14458	0.14480	0.14554	0.14606	0.14733	0.14825	0.15366
0.77000	0.77100	0.77200	0.77300	0.77400	0.77500	0.77600	0.77700	0.77800	0.77900
0.15646	0.15772	0.15807	0.15924	0.15996	0.16016	0.16367	0.16566	0.16632	0.17283
0.78000	0.78100	0.78200	0.78300	0.78400	0.78500	0.78600	0.78700	0.78800	0.78900
0.17322	0.17507	0.17894	0.17925	0.18345	0.18535	0.18778	0.18857	0.19000	0.19651
0.79000	0.79100	0.79200	0.79300	0.79400	0.79500	0.79600	0.79700	0.79800	0.79900
0.19721	0.19786	0.20068	0.20125	0.20382	0.20518	0.20587	0.20823	0.21134	0.21221
0.80000	0.80100	0.80200	0.80300	0.80400	0.80500	0.80600	0.80700	0.80800	0.80900
0.22352	0.22545	0.22716	0.23129	0.23543	0.23622	0.24052	0.24320	0.24411	0.24676

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.81000	0.81100	0.81200	0.81300	0.81400	0.81500	0.81600	0.81700	0.81800	0.81900
0.24761	0.24915	0.25375	0.25513	0.26817	0.26995	0.27168	0.27620	0.27704	0.27851
0.82000	0.82100	0.82200	0.82300	0.82400	0.82500	0.82600	0.82700	0.82800	0.82900
0.28262	0.28973	0.29113	0.29555	0.29665	0.30346	0.30534	0.30791	0.31583	0.31742
0.83000	0.83100	0.83200	0.83300	0.83400	0.83500	0.83600	0.83700	0.83800	0.83900
0.31949	0.32994	0.33479	0.33618	0.34004	0.34222	0.35304	0.35498	0.35639	0.35823
0.84000	0.84100	0.84200	0.84300	0.84400	0.84500	0.84600	0.84700	0.84800	0.84900
0.35970	0.36111	0.36322	0.36468	0.36738	0.37108	0.37893	0.38496	0.38696	0.38964
0.85000	0.85100	0.85200	0.85300	0.85400	0.85500	0.85600	0.85700	0.85800	0.85900
0.39599	0.40472	0.40558	0.41595	0.41672	0.42264	0.42430	0.42987	0.43173	0.43269
0.86000	0.86100	0.86200	0.86300	0.86400	0.86500	0.86600	0.86700	0.86800	0.86900
0.44425	0.44566	0.45314	0.45719	0.45809	0.46899	0.47290	0.47472	0.49103	0.49570
0.87000	0.87100	0.87200	0.87300	0.87400	0.87500	0.87600	0.87700	0.87800	0.87900
0.50088	0.50503	0.50639	0.50919	0.51187	0.51613	0.51968	0.52527	0.53068	0.53334
0.88000	0.88100	0.88200	0.88300	0.88400	0.88500	0.88600	0.88700	0.88800	0.88900
0.54597	0.54975	0.55334	0.56609	0.57619	0.57987	0.58620	0.58755	0.59489	0.59706
0.89000	0.89100	0.89200	0.89300	0.89400	0.89500	0.89600	0.89700	0.89800	0.89900
0.60103	0.60242	0.61198	0.61465	0.62054	0.63150	0.63347	0.63598	0.63919	0.65061
0.90000	0.90100	0.90200	0.90300	0.90400	0.90500	0.90600	0.90700	0.90800	0.90900
0.65276	0.65645	0.66419	0.66965	0.67748	0.68169	0.68592	0.69369	0.70516	0.70899

PROGRAM 14.2 BAYESIAN CONFIDENCE BOUND BASED ON CHI-SQUARED PRIOR DISTRIBUTIONS

****** LOWER BOUND ******

CUMULATIVE POSTERIOR DISTRIBUTION FUNCTION OF OVERALL RELIABILITY

0.91000	0.91100	0.91200	0.91300	0.91400	0.91500	0.91600	0.91700	0.91800	0.91900
0.71372	0.72309	0.72525	0.72779	0.73677	0.74179	0.74287	0.75119	0.75585	0.76967
0.92000	0.92100	0.92200	0.92300	0.92400	0.92500	0.92600	0.92700	0.92800	0.92900
0.77122	0.77486	0.77922	0.79131	0.79854	0.79948	0.80784	0.80947	0.81705	0.82121
0.93000	0.93100	0.93200	0.93300	0.93400	0.93500	0.93600	0.93700	0.93800	0.93900
0.82324	0.82666	0.82799	0.83298	0.83898	0.84625	0.85440	0.85764	0.85988	0.86716
0.94000	0.94100	0.94200	0.94300	0.94400	0.94500	0.94600	0.94700	0.94800	0.94900
0.87861	0.88027	0.88613	0.88942	0.89929	0.90011	0.90604	0.90881	0.91287	0.91493
0.95000	0.95100	0.95200	0.95300	0.95400	0.95500	0.95600	0.95700	0.95800	0.95900
0.92002	0.92132	0.92917	0.93274	0.93323	0.94384	0.94498	0.95018	0.95236	0.95616
0.96000	0.96100	0.96200	0.96300	0.96400	0.96500	0.96600	0.96700	0.96800	0.96900
0.96197	0.96284	0.96568	0.96719	0.97155	0.97359	0.97570	0.97726	0.98050	0.98272
0.97000	0.97100	0.97200	0.97300	0.97400	0.97500	0.97600	0.97700	0.97800	0.97900
0.98272	0.98425	0.98728	0.99012	0.99017	0.99239	0.99283	0.99554	0.99629	0.99682
0.98000	0.98100	0.98200	0.98300	0.98400	0.98500	0.98600	0.98700	0.98800	0.98900
0.99818	0.99818	0.99905	0.99913	0.99944	0.99944	0.99983	1.00000	1.00000	1.00000
0.99000	0.99100	0.99200	0.99300	0.99400	0.99500	0.99600	0.99700	0.99800	0.99900
1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000	1.00000

BAYESIAN 90 PERCENT CONFIDENCE BOUND 0.72611

PROGRAM 15.1
DEGREES OF FREEDOM ESTIMATES

PROGRAM 15.1

```
title
degrees of freedom estimates

chapter o

a>300

read(ln)
read(jn)

kn=1(1)jn

read(i)
read(j)
read(k)
read(a)


x=0random(ln,o)
u=aa+1.o


in=1(1)2
l=1(1)k

o=i
m=1
c=a

1)d=o
e=o
n=1(1)o
b=0random(x,2)
b=cb
e=bb+e
d=b+d
repeat
g=dd/o
e=e-g
o=o-1
e=e/o
jump 2,m=2
f=e
m=2
c=1.
o=j
jump 1

2)al=e+f
al=al/u
e=e/j
f=f/i
g=e+f
g=gg
p=i-1.o
q=j-1.o
h=ff/p+ee/q
r=l+k
ar=g/h
p=i+1.o
q=j+1.o
h=ff/p+ee/q
r=r+k
ar=g/h-2.o
repeat


t)=3)
o=2k+1.o
p=1(k)o
n=p+k-1.o
d=o
e=o
q=p(1)n
d=aq+d
e=aqaq+e
repeat
e=e-dd/k
l=k-1.o
e=e/l
d=d/k
jump (t)

4)repeat


3)newline
1065,o,o,5.1
newline 2
space 43

caption
program 15.1  degrees  of  freedom  estimates
newline 3
space 40
caption
n1     n2    trials    ratio s1/s2    case    odd number
newline
space 38
print(i)2,1
print(j)2,1
print(k)2,1
print(a)4,4
print(in)5,1
print(ln)4,1
newline 3
space 42
caption
estimate of total variance / true total variance
newline 2
space 47
caption
average   variance   degrees of freedom
newline
space 45
print(d)3,4
print(e)2,4
d=2/e
space 4
print(d)3,4

t)=5)
jump 4



5)newline 3
space 29
caption
satterthwaitens approximation     average =
print(d)2,4
caption
   variance =
print(e)2,4

t)=6)
jump 4
```

```
6)newline 2
space 26
caption
dixon-and masseyns approximation     average =
print(d)2,4
caption
   variance =
print(e)2,4



7)m=0
p=1(1)k -
jump 8,a(p+1)≥ap
q=p+2k
n=p(k)q
e=an-
an=a(n+1)
a(n+1)=e
repeat
m=1

8)repeat
jump 7,m=1.0



newline 4
space 38
caption
line 1  the ranked ratios of estimated to true variances
newline
space 38
caption
line 2  satterthwaitens estimate
newline
space 38
caption
line 3- dixon and masseyns estimate
newline
newline
n=k-9
p=1(10)n
pn=p
q=1(1)3
o=pn+9
```

```
space 16
s=pn(1)o
print(as)2,4
repeat
newline
pn=pn+k
repeat
newline
newline
repeat
repeat
repeat

12)end


close



5.0    3.0


 5.    10.    50.    2.0
10.    10.    50.    2.0
10.    10.    50.    1.0

***Z


*******
```

PROGRAM 15,1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
5.0	10,0	50,0	2.0000	1.0	5.0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
1,0936	0,3422	5,8449

SATTERTHWAITE'S APPROXIMATION AVERAGE = 5,7078 VARIANCE = 3,6931

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 6,4308 VARIANCE = 6,5649

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0.2547	0,3469	0,4463	0,4648	0,5322	0,5586	0,5858	0,5905	0,5957	0.6017
11.5508	12,7486	9,7723	9,5775	7,4429	6,8508	5,0288	7,5036	7,3560	8,0474
14.0195	14,9716	12,0271	11,7881	8,9865	8,1618	5,5314	9,0701	8,8665	9,8094
0.6032	0,6414	0,6453	0.6769	0,6877	0.7163	0,7182	0,7634	0,7966	0,8018
5.5185	5,2608	4,7754	6,3779	5,3559	5,4769	8,9931	6,0949	5,4165	4,6567
6.2501	5,8728	5,1566	7,4916	6,0123	6,1894	11,0521	7,0858	6,1011	4,9806
0,8025	0,8373	0,8496	0,8651	0,8910	0,9174	0,9759	0,9956	1,1333	1.1485
4,8340	4,9634	6,8323	4,8179	4,8048	4,3104	4,6713	4,3301	4,4962	4,4734
5,2435	5.4348	8,1358	5,2196	5,2003	4,4647	5,0022	4,4940	4,7418	4,7079
1.1510	1,2413	1,2481	1,2650	1,2714	1,3239	1,3289	1,3495	1,4373	1,4402
4,7518	4,9334	5,1449	4,5445	4,8298	4,7824	4,2511	4,3112	4,4028	4,6573
5,1216	5,3905	5,7025	4,8137	5,2372	5,1670	4,3760	4,4658	4,6025	4,9813
1,5541	1,5947	1,6419	1,7355	1,8174	1,8362	2,0894	2,3848	2,4772	3,0505
4,6257	4,7000	4,4368	4,9874	4,9923	4,5648	4,7510	4,8074	4,2268	4,3511
4,9345	5,0447	4,6532	5,4703	5,4776	4,8439	5,1204	5,2041	4,3397	4,5253

PROGRAM 15,1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
5.0	10.0	50.0	2.0000	2.0	5.0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
1,0932	0,4409	4,5365

SATTERTHWAITE'S APPROXIMATION AVERAGE = 5,5482 VARIANCE = 2,8645

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 6,2246 VARIANCE = 5,2258

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0.2798	0,2806	0,3001	0,3407	0,3770	0,4015	0.4171	0,4374	0,4593	0.4738
10.6295	5,2182	7,8299	9,4600	7,0794	8,1185	5,5200	12,3767	6,8626	4,8569
13,0361	5,8102	9,5157	11,6423	8,4823	9,9049	6,2523	14,7505	8,1785	5,2774
0.4889	0,5691	0,5764	0,5835	0,5975	0.6012	0,6220	0,6505	0,6712	0,7034
4.8166	6,0904	6,7811	5,3099	5,5636	4.8110	7,4934	6,6940	4,8724	5,6882
5.2176	7,0793	8,0636	5,9449	6,3160	5,2093	9,0560	7,9407	5,3004	6,4974
0,7353	0,7917	0,8191	0,8599	0,8902	0,8949	0,9304	1,0508	1,1399	1,1729
5.3753	4,4933	4,4199	6,2767	4,9304	4.5956	4,7649	5,4987	4,6749	5,1917
6.0408	4,7374	4,6280	7,3468	5,3861	4,8897	5,1410	6,2212	5,0075	5,7713
1.1807	1,2035	1,2489	1,3771	1,4170	1,4581	1,4962	1,4968	1,5265	1,5556
4.6334	4,6838	4,7564	4,3978	4,8628	4,6545	4,5313	5,5749	4,8828	4,6748
4.9459	5,0207	5,1285	4,5952	5,2861	4,9772	4,7941	6,3325	5,3156	5,0074
1,5661	1,6740	1,9373	2,0523	2,1105	2,2888	2,3720	2,5065	2,5278	2,5474
4.4984	4,2456	4,7897	4,1768	4,1875	4,4509	4,5129	4,1423	4,2018	4,2601
4.7450	4,3679	5,1778	4,2650	4,2808	4,6743	4,7666	4,2132	4,3023	4,3895

PROGRAM 15.1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
10.0	10.0	50.0	2.0000	1.0	5.0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
1.0290	0.1558	12.8402

SATTERTHWAITE'S APPROXIMATION AVERAGE = 13.6321 VARIANCE = 5.1089

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 14.6615 VARIANCE = 7.6318

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0.3342	0.4446	0.5265	0.5392	0.5648	0.5839	0.5950	0.6169	0.6760	0.7005
14.2461	16.0133	15.9881	16.6733	17.9055	16.3075	11.2517	17.7176	14.4418	13.8604
15.4119	17.5718	17.5410	18.3785	19.8845	17.9313	11.7521	19.6549	15.6510	14.9405
0.7238	0.7294	0.7295	0.7303	0.7589	0.7589	0.8126	0.8211	0.8290	0.8391
14.6774	12.7872	11.0907	17.8577	12.0128	15.8986	17.0788	12.4908	12.4579	11.8488
15.9390	13.6289	11.5553	19.8261	12.6823	17.4316	18.8740	13.2665	13.2263	12.4818
0.9022	0.9156	0.9157	0.9258	0.9334	0.9400	0.9436	0.9763	0.9825	1.0354
17.7605	12.5756	11.6537	11.8382	14.9392	14.0079	13.2719	10.9426	16.4320	13.2819
19.7073	13.3702	12.2434	12.4689	16.2591	15.1208	14.2213	11.3743	18.0835	14.2334
1.0884	1.1352	1.1678	1.1831	1.1977	1.2550	1.2804	1.3271	1.3731	1.4070
11.6838	14.2847	13.9777	11.2079	11.1171	15.9827	13.5159	12.6820	13.7612	16.4392
12.2802	15.4590	15.0839	11.6985	11.5875	17.5344	14.5194	13.5003	14.8192	18.0924
1.4166	1.4506	1.4554	1.4859	1.5293	1.5461	1.6191	1.7361	1.9294	2.0824
12.2631	11.5107	11.1604	11.0399	15.8064	11.0387	11.4258	10.0695	11.8592	11.4698
12.9883	12.0686	11.6405	11.4932	17.3189	11.4917	11.9649	10.3072	12.4946	12.0187

PROGRAM 15,1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
10.0	10,0	50,0	2.0000	2,0	5,0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
0,9993	0,1390	14,3838

SATTERTHWAITE'S APPROXIMATION AVERAGE = 13,2604 VARIANCE = 3,5878

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 14,2071 VARIANCE = 5,3595

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0.4148	0.4389	0,4808	0,4896	0,4925	0.5291	0,5591	0,5711	0,6063	0.6323
13,1794	16,8646	16,1492	12,8372	12,7620	12.4047	12,7767	17,8936	11,0551	13.8536
14.1081	18,6123	17,7379	13,6899	13,5980	13,1613	13,6159	19,8699	11,5118	14,9322
0,6589	0,6833	0,7110	0,7486	0,7781	0,8051	0,8177	0,8230	0,8570	0.9042
14,8261	14,7292	15,5037	15,5732	11,2090	11.9976	14,3107	13,9131	15,4761	14,0095
16.1208	16,0024	16,9490	17,0339	11,6999	12,6637	15,4909	15,0049	16,9152	15,1227
0.9221	0,9291	0,9340	0.9416	0,9418	0,9516	0,9625	0,9782	0,9813	1,0027
11,3561	15,8627	15,6665	11,0776	10,1896	13,8667	11,8481	12,8121	15,5642	11,7746
11.8796	17,3878	17,1480	11,5393	10,4539	14,9482	12,4810	13,6592	17,0229	12,3911
1.0306	1,0708	1,0936	1,1625	1,1630	1,1714	1,2021	1,2154	1,3076	1,3432
12,6464	13,9413	14,2785	14,2804	11,7516	14.0798	11,8293	10,8980	12,3580	12,5031
13.4567	15,0393	15,4515	15,4539	12,3631	15,2087	12,4581	11,3198	13,1042	13,2815
1,3642	1,3675	1,4013	1,4428	1,5237	1,5512	1.6140	1,6965	1,7920	1.9041
13.1159	13,5656	12,8933	11,0007	16,0637	12,1124	13,5911	10,9262	9,2667	10,5752
14,0305	14,5802	13,7584	11,4453	17,6334	12,8040	14,6114	11,3542	9,3260	10,9253

PROGRAM 15,1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
10.0	10,0	50,0	1.0000	1.0	5.0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
1,0393	0,1195	16,7331

SATTERTHWAITE'S APPROXIMATION AVERAGE = 16,5676 VARIANCE = 1,9180

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 18,2493 VARIANCE = 2.8652

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0,3613	0,4977	0,5479	0.6000	0,6476	0.6835	0,6999	0,7031	0,7356	0.7360
17,7220	16,2722	16,3830	15.9392	16,4071	17,4115	15,7006	17,9303	17,8867	16.0913
19.6602	17,8883	18,0236	17,4812	18,0532	19,2807	17,1896	19,9148	19,8615	17.6671
0,7417	0,7443	0,7718	0,7769	0,7904	0,7973	0,8081	0,8203	0,8669	0.9209
17,6163	17,2237	17,7977	17,7783	15,6031	16,9605	17,4720	17,2106	17,8434	12.7167
19,5310	19,0512	19,7528	19,7290	17,0705	18,7295	19,3547	19,0352	19,8086	13.5427
0.9272	0,9463	0,9504	0,9852	0,9879	0,9983	1,0369	1,0393	1,0623	1.0800
16.4918	17,9996	17,0040	16,1849	15,9959	17,8311	12,3646	17,9993	17,2923	13.9403
18.1567	19,9995	18,7827	17,7815	17,5506	19,7935	13,1123	19,9992	19,1350	15.0382
1,0928	1,2059	1,2156	1,2310	1,2373	1,2455	1,2507	1,2647	1,2679	1.2683
15.2210	16,0874	15,8270	17,7022	17,8432	16,7386	15,9620	15,8244	17,8918	13.0622
16,6034	17,6624	17,3441	19,6361	19,8084	18,4583	17,5092	17,3409	19,8677	13.9649
1,3051	1,3093	1,3115	1,3785	1,4310	1,5429	1,7131	1,7807	1,7920	1,8555
17,6422	17,9758	14,1674	16,5950	17,9185	16,4123	17,2366	16,6707	15,9544	16.5774
19,5627	19,9704	15,3158	18.2828	19,9003	18,0595	19,0669	18,3753	17,4998	18.2613

PROGRAM 15,1 DEGREES OF FREEDOM ESTIMATES

N1	N2	TRIALS	RATIO S1/S2	CASE	ODD NUMBER
10.0	10,0	50,0	1.0000	2.0	5.0

ESTIMATE OF TOTAL VARIANCE / TRUE TOTAL VARIANCE

AVERAGE	VARIANCE	DEGREES OF FREEDOM
0,9782	0,1078	18,5479

SATTERTHWAITE'S APPROXIMATION AVERAGE = 16,8636 VARIANCE = 2,1582

DIXON AND MASSEY'S APPROXIMATION AVERAGE = 18,6111 VARIANCE = 3,2240

LINE 1 THE RANKED RATIOS OF ESTIMATED TO TRUE VARIANCES
LINE 2 SATTERTHWAITE'S ESTIMATE
LINE 3 DIXON AND MASSEY'S ESTIMATE

0,4130	0,4737	0,4739	0,4936	0,4968	0,5385	0,5790	0,5986	0,6480	0,6637
17.9990	17,9218	17,9454	17,7447	15,8609	17,9268	15,4817	16,2505	16,1872	17,8890
19.9988	19,9045	19,9333	19,6880	17,3855	19,9105	16,9220	17,8618	17,7844	19,8643
0,6986	0,7241	0,7437	0,7658	0,7735	0,7795	0,8434	0,8511	0,8537	0,8677
13.4645	17,3953	17,3723	17,4380	15,9105	16,4704	16,8458	13,8401	17,2229	17,8679
14,4567	19,2609	19,2328	19,3131	17,4462	18,1304	18.5893	14,9157	19,0502	19,8386
0,8832	0,8884	0,8927	0,9449	0,9604	0,9792	0,9816	0,9998	1,0146	1,0222
17.1289	17,6886	16,7859	17,9380	17,8304	15,4962	17,8766	17,8845	16,8694	17,0982
18,9353	19,6194	18,5160	19,9243	19,7927	16,9398	19,8492	19,8588	18,6181	18,8978
1,0644	1,1214	1,1314	1,1320	1,1691	1,1693	1,1754	1,1853	1,2148	1,2508
17,1995	16,7037	17,8574	16,5253	10,0635	16,7937	15,7382	17,7054	17,7130	17,8006
19,0216	18,4157	19,8257	18,1976	10,2998	18,5256	17,2356	19,6400	19,6493	19,7562
1,2602	1,2638	1,3511	1,3628	1,3710	1,4037	1,4099	1,4794	1,6601	1,8849
17.7044	17,8047	17,9953	17,9601	15,5640	17,9667	17,5111	14,6472	17,9616	16,3344
19,6388	19,7613	19,9943	19,9512	17,0227	19,9594	19,4024	15,9021	19,9530	17,9642