

```
%P E I
```

```
mu=[4 2*10^7 10^-4]  
sig=[1 0.5*10^7 0.2*10^-4]  
emu=mu;  
esig=sig;
```

```
xk_iter=[];  
uk_iter=[];  
b_iter=[];
```

```
%k=1 %P E I
```

```
xk=mu
```

```
% Equiv norm variable for P
```

```
%extreme (Gumbel) dist parameters
```

```
alp=1.2825/sig(1)  
d1=mu(1)-0.5772/alp
```

```
pk=xk(1);  
fpk=alp*exp(-(pk-d1)*alp-exp(-(pk-d1)*alp))  
Fpk=exp(-exp(-(pk-d1)*alp))  
sig_equiv=pdf('norm',icdf('norm',Fpk,0,1),0,1)/fpk  
mu_equiv=pk-icdf('norm',Fpk,0,1)*sig_equiv
```

```
emu(1)=mu_equiv;  
esig(1)=sig_equiv;  
uk=(xk-emu)./esig
```

```
xk_iter=[xk_iter;xk];  
uk_iter=[uk_iter;uk];
```

```
%P E I
```

```
gxk=xk(2)*xk(3)-78.12*xk(1)  
dgx=[-78.12
```

```
xk(3)
xk(2) ]
```

```
B1=gxk-dgx(1)*esig(1)*uk(1)-dgx(2)*esig(2)*uk(2)-dgx(3)*esig(3)*uk(3)
B2=sqrt((dgx(1)*esig(1))^2+(dgx(2)*esig(2))^2+(dgx(3)*esig(3))^2)
```

```
bk=B1/B2
```

```
a1=-dgx(1)*esig(1)/B2
a2=-dgx(2)*esig(2)/B2
a3=-dgx(3)*esig(3)/B2
```

```
b_iter=[b_iter;bk]
xk_next=[emu(1)+bk*esig(1)*a1 emu(2)+bk*esig(2)*a2 emu(3)+bk*esig(3)*a3];
```

```
%k=2 %P E I
xk=xk_next
```

```
% Equiv norm variable for P
```

```
%extreme (Gumbel) dist parameters
```

```
alp=1.2825/sig(1)
d1=mu(1)-0.5772/alp
```

```
pk=xk(1);
fpk=alp*exp(-(pk-d1)*alp-exp(-(pk-d1)*alp))
Fpk=exp(-exp(-(pk-d1)*alp))
sig_equiv=pdf('norm',icdf('norm',Fpk,0,1),0,1)/fpk
mu_equiv=pk-icdf('norm',Fpk,0,1)*sig_equiv
```

```
emu(1)=mu_equiv;
esig(1)=sig_equiv;
```

```
uk=(xk-emu)./esig
```

```
xk_iter=[xk_iter;xk];
```

```
uk_iter=[uk_iter;uk];
```

```
%P E I
```

```
gxk=xk(2)*xk(3)-78.12*xk(1)
```

```
dgx=[-78.12
```

```
      xk(3)
```

```
      xk(2)]
```

```
B1=gxk-dgx(1)*esig(1)*uk(1)-dgx(2)*esig(2)*uk(2)-dgx(3)*esig(3)*uk(3)
```

```
B2=sqrt((dgx(1)*esig(1))^2+(dgx(2)*esig(2))^2+(dgx(3)*esig(3))^2)
```

```
bk=B1/B2
```

```
a1=-dgx(1)*esig(1)/B2
```

```
a2=-dgx(2)*esig(2)/B2
```

```
a3=-dgx(3)*esig(3)/B2
```

```
b_iter=[b_iter;bk]
```

```
xk_next=[emu(1)+bk*esig(1)*a1 emu(2)+bk*esig(2)*a2 emu(3)+bk*esig(3)*a3];
```

```
% plot(b_iter, '*')
```

```
% figure, scatter(xk_iter(:,1),xk_iter(:,2), 'filled', 'MarkerFaceColor', 'k')
```