**Question 5**

>> a=[-2 0 0;1 0 1;0 -2 -2];b=[1;0;1];c=[1 -1 0];d=0;

>> [y,x,t]=step(a,b,c,d)

>> plot(t,y,t,x)

>> max(x(:,1))

ans =

0.5000

>> min(x(:,2))

ans =

0

>> max(x(:,3))

ans =

0.2704

>> min(x(:,3))

ans =

-0.5277

>> min(y(:,1))

ans =

-0.5442

>> max(y(:,1))

ans =

0.1552

>> min(y(:,1))

ans =

-0.5442

>> min(x(:,1))

ans =

0

>> max(x(:,2))

ans =

1.0432

>> ymax=0.5442;

>> x1max=0.5;

>> x2max=1.0432;

>> x3max=0.5277;

>> x1=ymax/x1max

x1 =

1.0884

>> x2=ymax/x2max

x2 =

0.5217

>> x3=ymax/x3max

x3 =

1.0313

>> p=[x1 0 0;0 x2 0;0 0 x3]

p =

1.0884 0 0

0 0.5217 0

0 0 1.0313

>> A=p\*a\*inv(p)

A =

-2.0000 0 0

0.4793 0 0.5058

0 -3.9538 -2.0000

>> B=p\*b

B =

1.0884

0

1.0313

>> C=c\*inv(p)

C =

0.9188 -1.9169 0

>> D=0

D =

0

>> [Y,X,T]=step(A,B,C,D);

>> plot(T,Y,T,X)