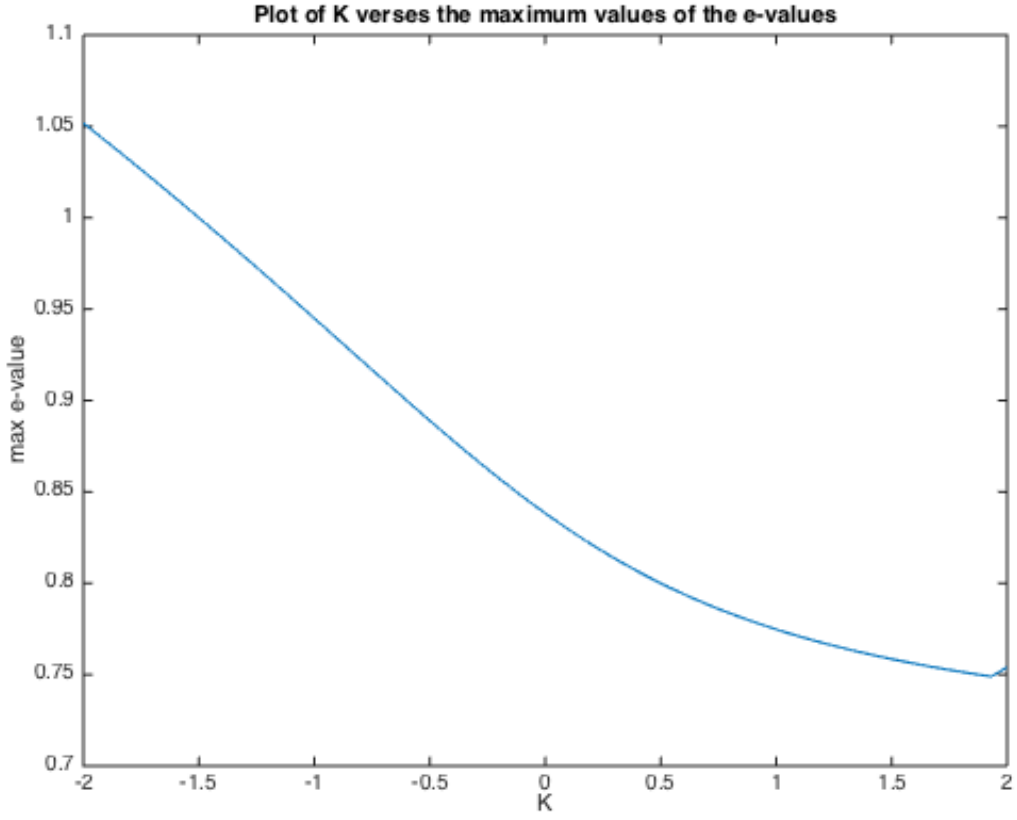
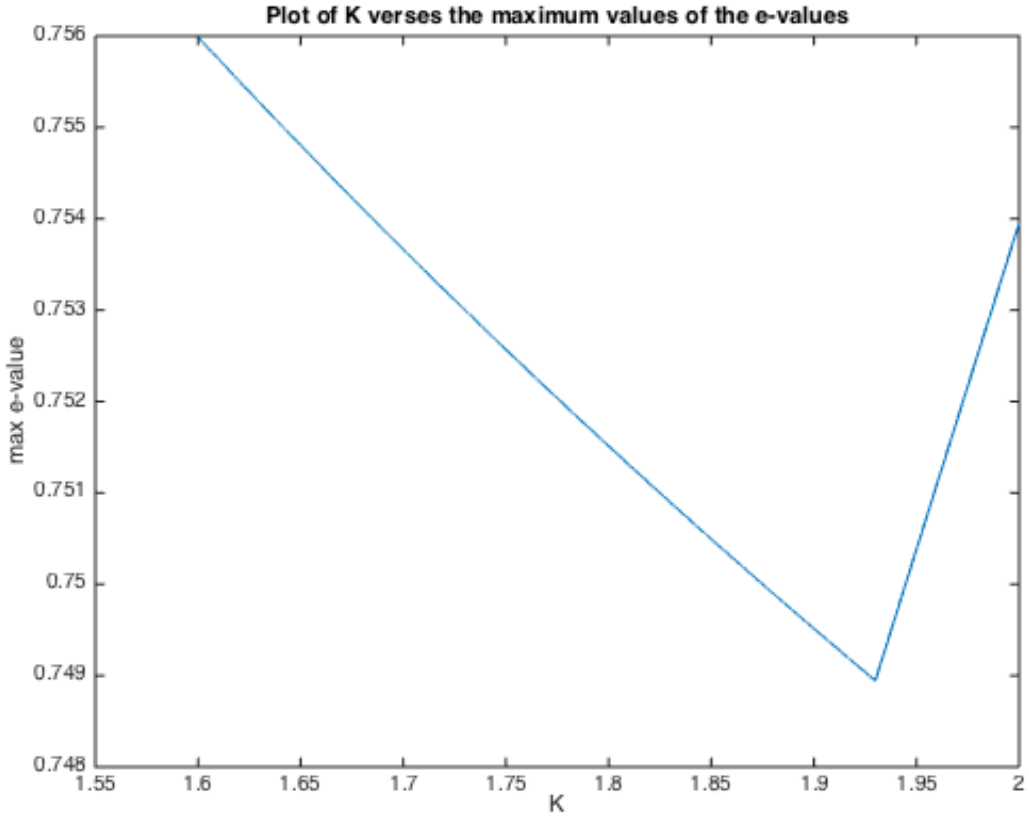
```
clear; close all;
A = [0.5 1 0.1; -0.1 0.5 -0.1; 0.2 0 0.9];
B = [1;0;0];
C = [0 1 0];

K = linspace(-2, 2,100000);

mineig = 0;
for i = 1:length(K)
   Ahat = A+K(i)*B*C;
   E = eig(Ahat);
   Eig(i) = max((abs(E)));
end

[mineig, minindex] = min(Eig);
minK = K(minindex);

disp(['The optimal K such that the feedback system is maximilly damped is ' num2str(minK)])
;
disp(['The value for the minimized maximum e-value is: ' num2str(mineig)]);
```

```
The optimal K such that the feedback system is maximilly damped is 1.9299
The value for the minimized maximum e-value is: 0.74894
```

```
plot(K, Eig);
title('Plot of K verses the maximum values of the e-values')
xlabel('K');
ylabel('max e-value');
figure;
plot(K(90000:100000), Eig((90000:100000)));
title('Plot of K verses the maximum values of the e-values')
xlabel('K');
ylabel('max e-value');
```


Plot of K verses the maximum values of the e-values
max e-value
K
1.1
1.05
1
0.95
0.9
0.85
0.8
0.75
0.7
-2
-1.5
-1
-0.5
0
0.5
1
1.5
2


Plot of K verses the maximum values of the e-values
max e-value
K
0.756
0.755
0.754
0.753
0.752
0.751
0.75
0.749
0.748
1.55
1.6
1.65
1.7
1.75
1.8
1.85
1.9
1.95
2

Published with MATLAB® R2014b