```
% PES1UG20EC083 Jacob V Sanoj
% CS 3

clear ;
close all;
clc;

% Plotting root locus for p = 15, 12, 11.5
% k = 15

n = [1 4/3];
d = conv([1 0 0], [0 1 15]);
tf_locus = tf(n,d);
subplot(2,2,1)
rlocus(tf_locus);
stable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -8.9400 + 4.4020i
```

```
marginally_stable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -9.3900 - 4.8314i
```

```
unstable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -12.2700 + 5.2609i
```

```
disp("for k=15")
```

```
for k=15
```

```
disp("Stable: "+ stable + newline() + "Marginally Stable:" + marginally_stable + newlin
```

```
Stable: 84.6292
Marginally Stable:87.8855
Unstable: 87.0431
```

```
% k = 12

n = [1 4/3];
d = conv([1 0 0], [0 1 12]);
tf_locus = tf(n,d);
subplot(2,2,2)
rlocus(tf_locus);
stable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -8.6131 + 3.3871i
```

```
marginally_stable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
```

```
selected_point = -8.6131 - 13.0645i
```

```
unstable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -10.0449 + 8.8710i
```

```
disp("For k=12")
```

```
For k=12
```

```
disp("Stable: "+ stable + newline() + "Marginally Stable:" + marginally_stable + newlin
```

```
Stable: 51.1009
Marginally Stable:220.9722
Unstable: 131.2133
```

```
% p = 11.5

n = [1 4/3];
d = conv([1 0 0], [0 1 11.5]);
tf_locus = tf(n,d);
subplot(2,2,3)
rlocus(tf_locus);
stable = rlocfind(tf_locus);
```

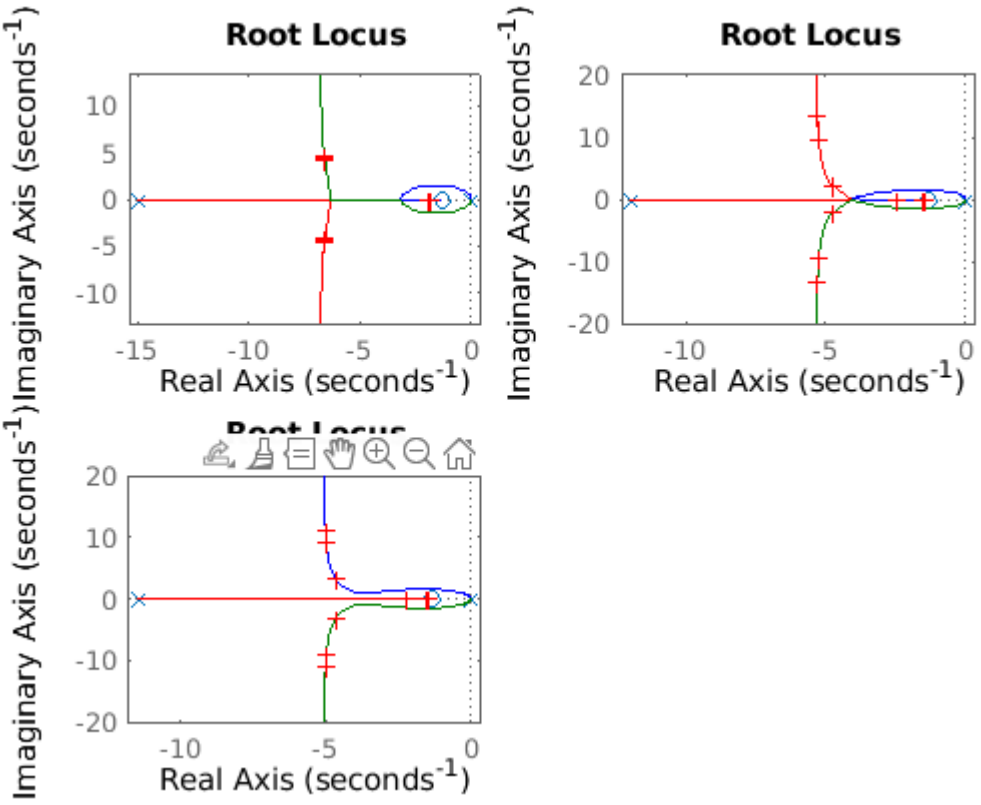
```
Select a point in the graphics window
selected_point = -8.3030 + 8.7805i
```

```
marginally_stable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
selected_point = -9.0620 - 3.9024i
```

```
unstable = rlocfind(tf_locus);
```

```
Select a point in the graphics window
```




```
selected_point = -6.9230 - 11.0569i
```

```
disp("For k=12")
```

```
For k=12
```

```
disp("Stable: "+ stable + newline() + "Marginally Stable:" + marginally_stable + newlin
```

```
Stable: 121.7285
Marginally Stable:51.7371
Unstable: 164.3769
```