BATCH 4

EXPERIMENT NO 6

FROM MATLAB

BY

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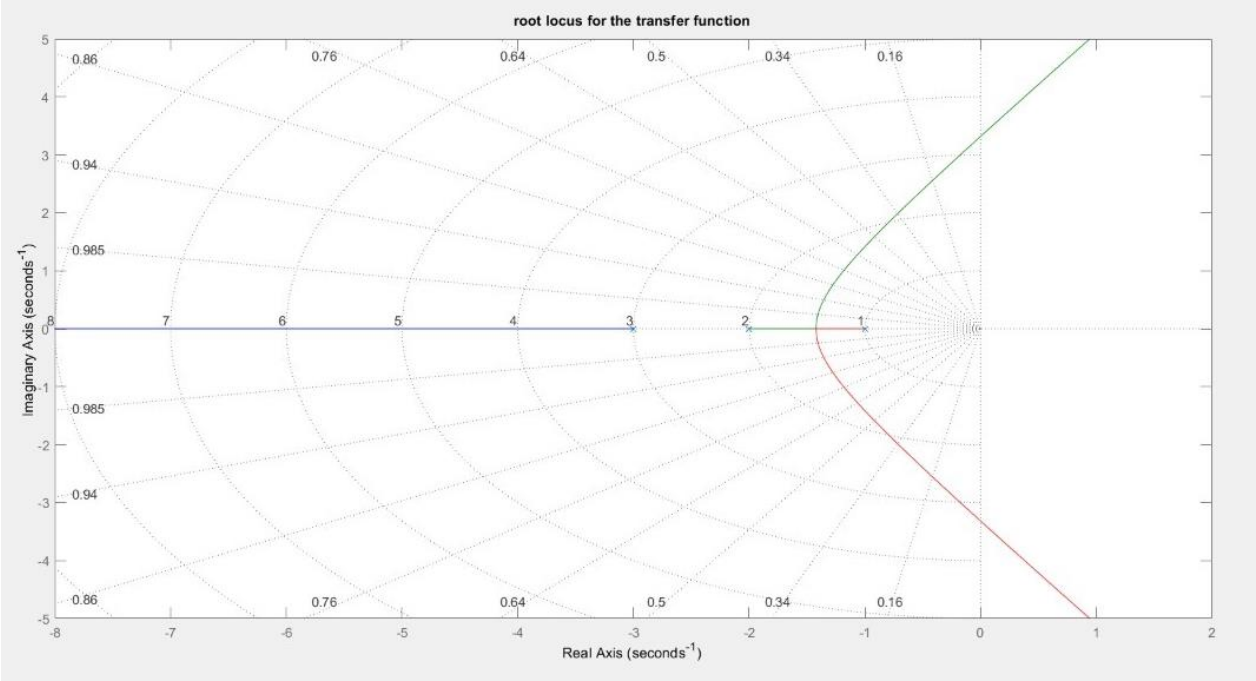
A)ROOT LOCUS OF GIVEN TRANSFER FUNCTION

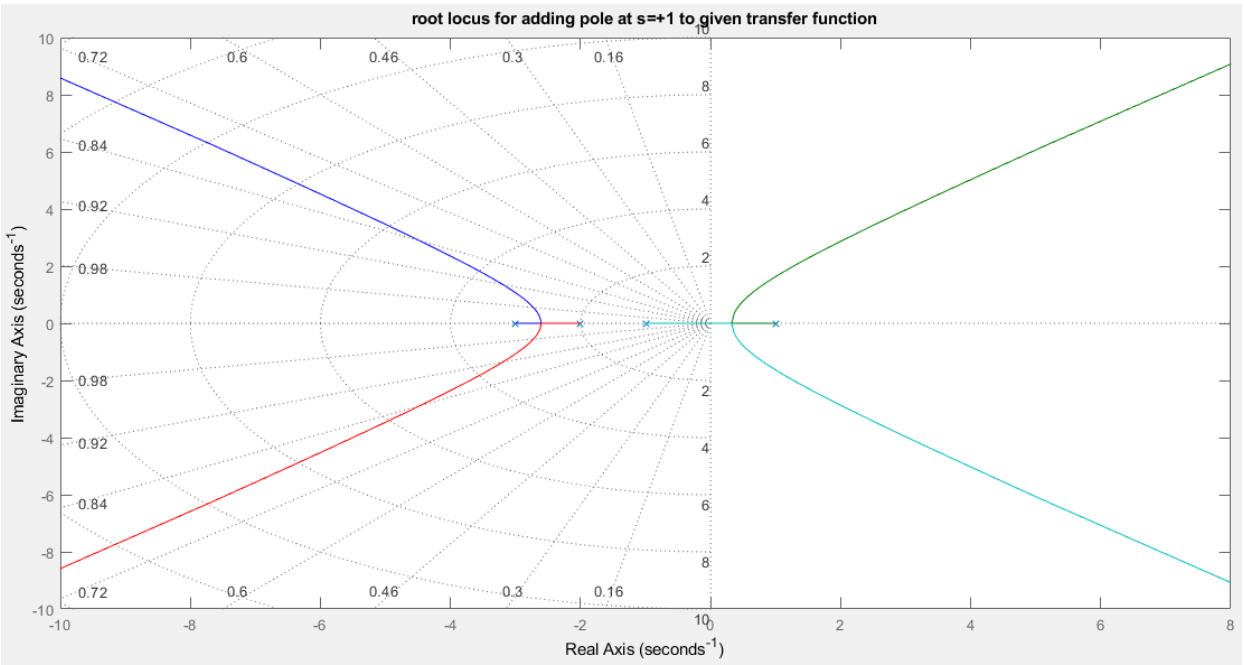
cslab6.m

```
sys=tf([36],[1 6 11 6])
figure(1)
zpk(sys)
rlocus(sys)
grid
title('root locus for given transfer function')

sys1=tf([36],[1 5 5 -5 -6])
figure(2)
zpk(sys1)
rlocus(sys1)
grid
title('root locus for adding pole at s=+1 to given transfer function')

sys2=tf([36],[1 7 17 17 6])
figure(3)
zpk(sys2)
rlocus(sys2)
grid
title('root locus for adding pole at s=-1 to given transfer function')

sys3=tf([36 -36],[1 6 11 6])
figure(4)
zpk(sys3)
rlocus(sys3)
grid
title('root locus for adding zero at s=+1 to given transfer function')

sys4=tf([36],[1 5 6])
figure(5)
zpk(sys4)
rlocus(sys4)
```

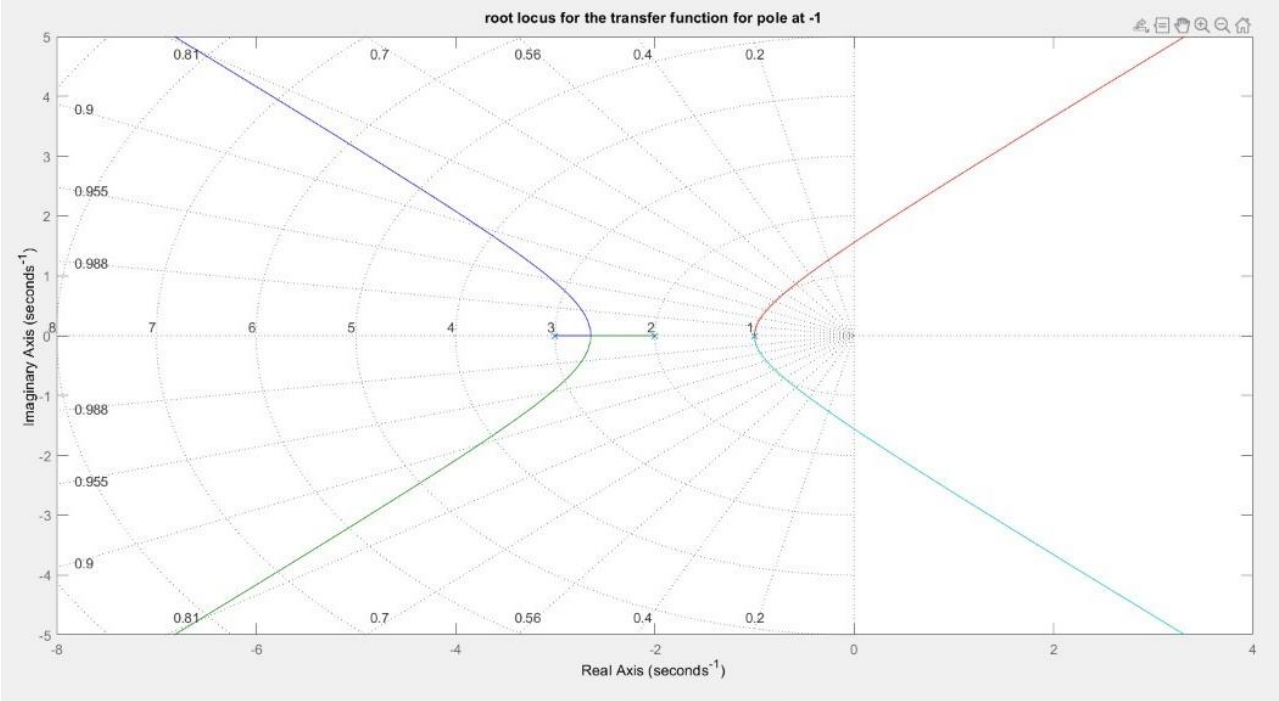
For Given Transfer Function



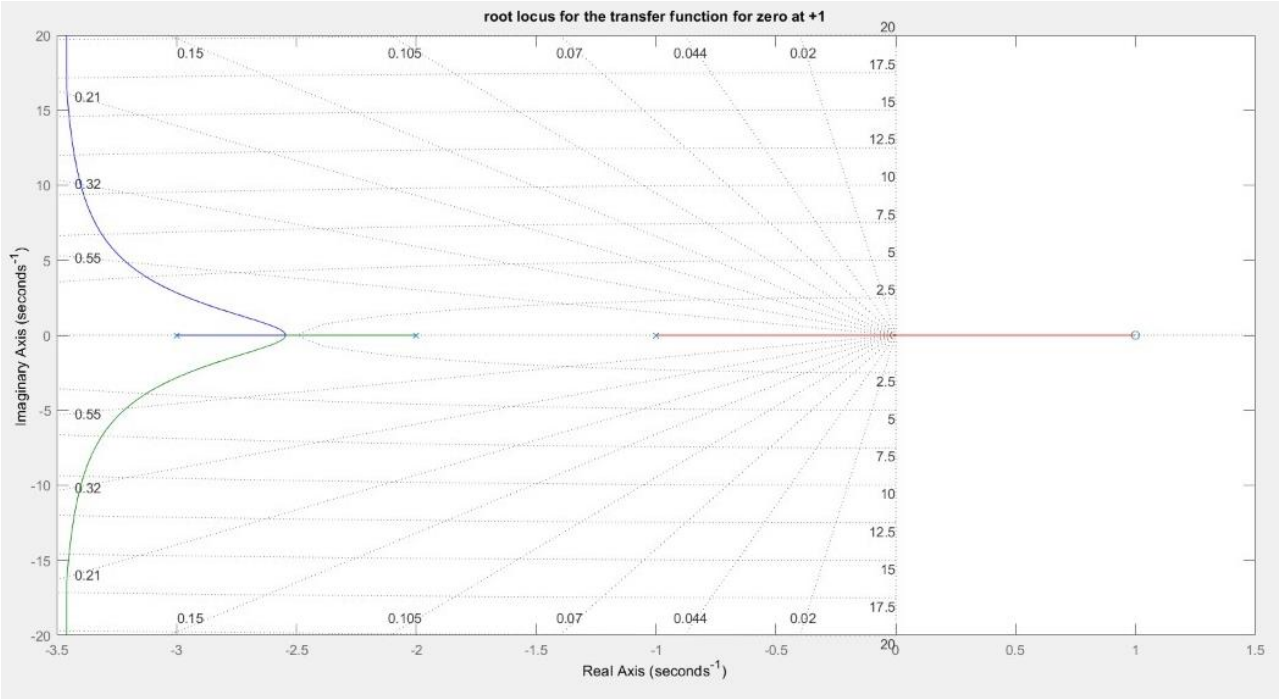
For adding pole at S=+1



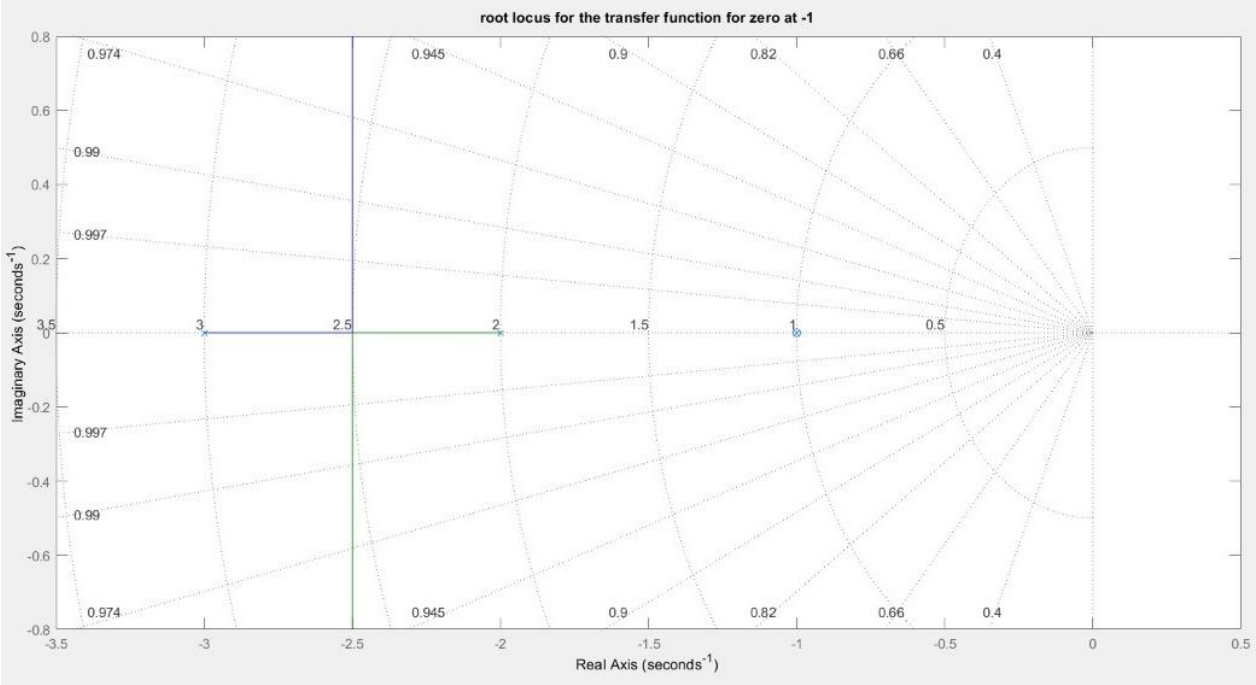
For adding pole at S=-1



For adding Zero at S=+1



For adding Zero at S=-1

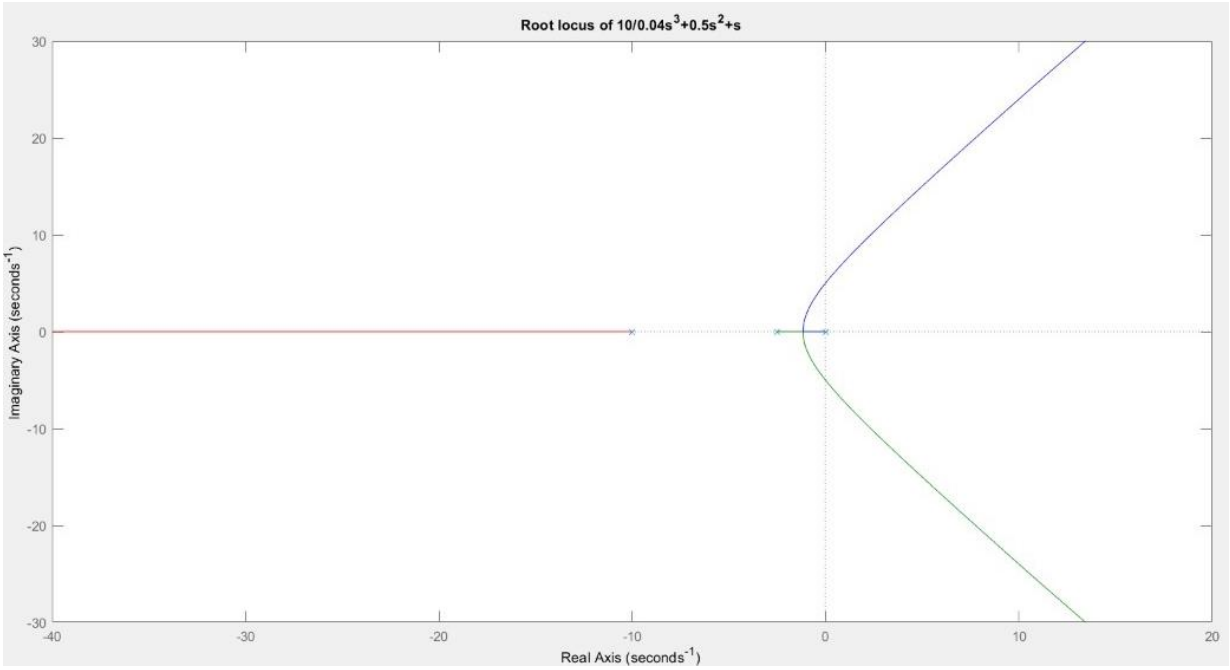


BODE PLOT , NYQUIST PLOT AND ROOT LOCUS ON STABILITY

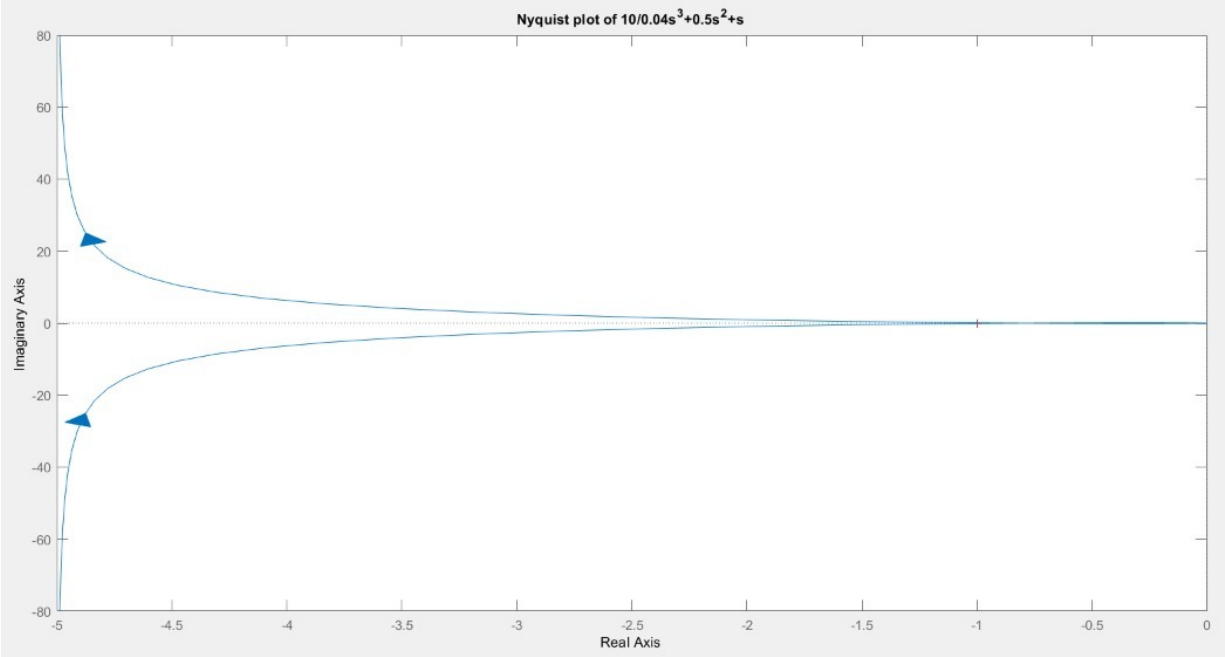
1.G(s)=10/s(1+0.4s)(1+0.1s)

```
%%stability for 3rd order system
num=[10];
den=[0.04,0.5,1,0];
g2=tf(num,den);
figure(5)
bode(g2);
margin(g2);
title('Bode plot of 10/0.04s^3+0.5s^2+s');
margin(g2);
figure(6);
nyquist(g2);
title('Nyquist plot of 10/0.04s^3+0.5s^2+s');
figure(7);
rlocus(g2);
title('Root locus of 10/0.04s^3+0.5s^2+s');
```

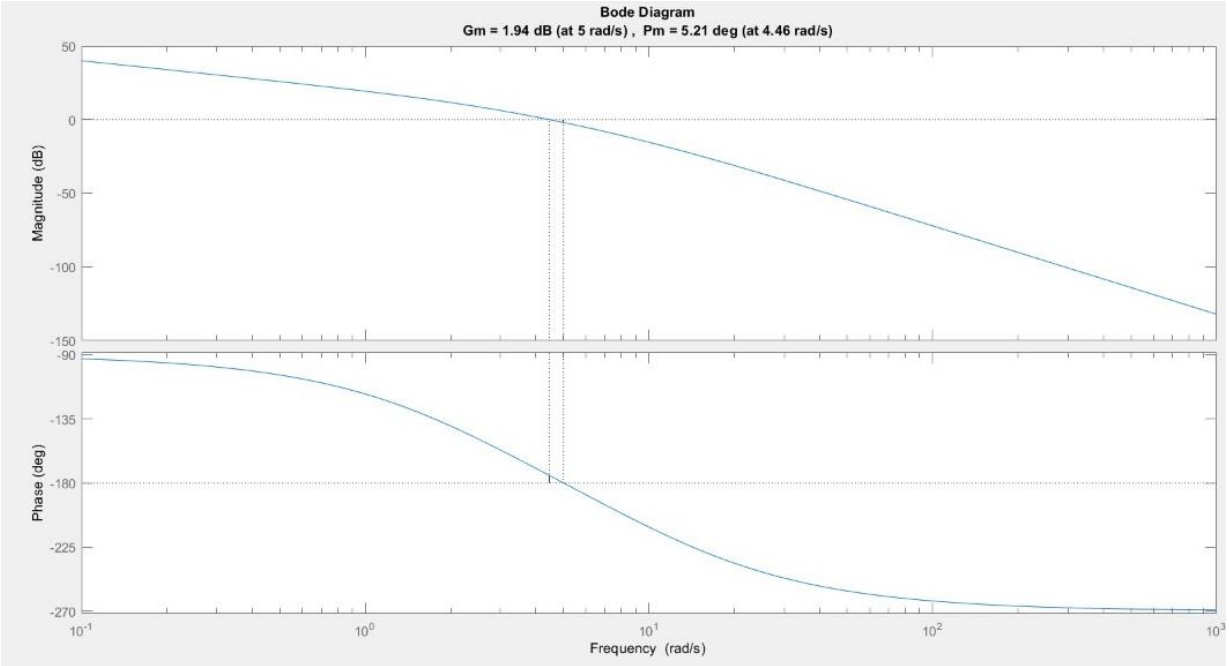
Root Locus :



Nyquist Plot:



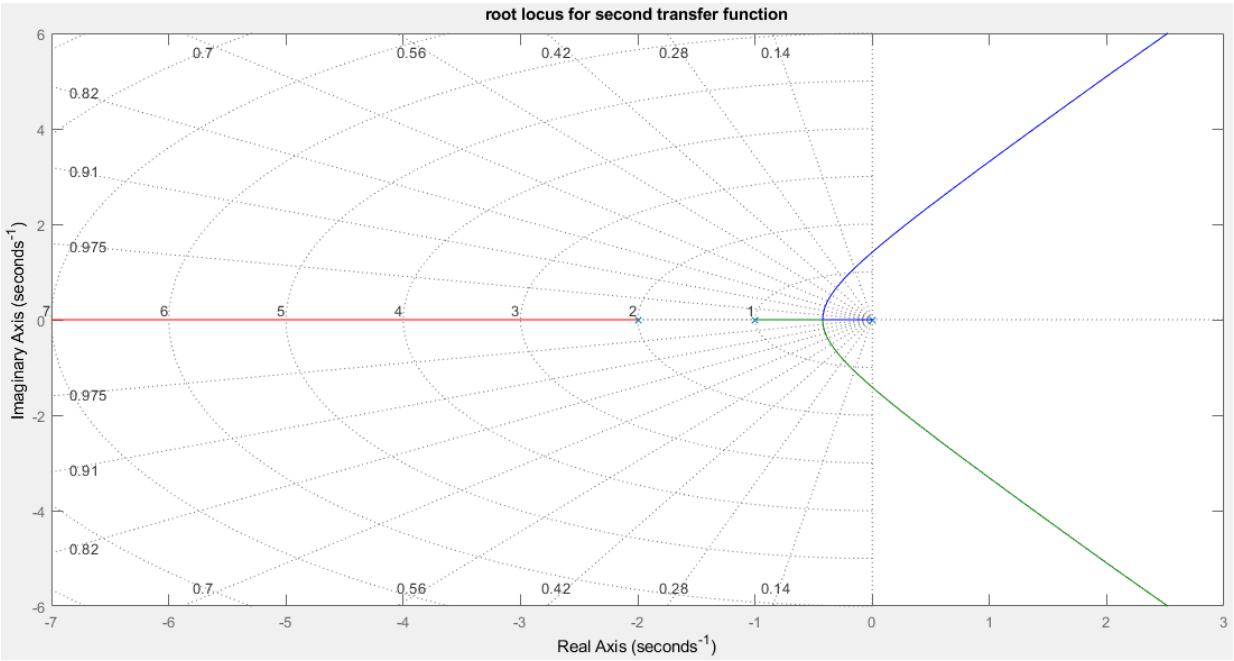
Bode Plot:



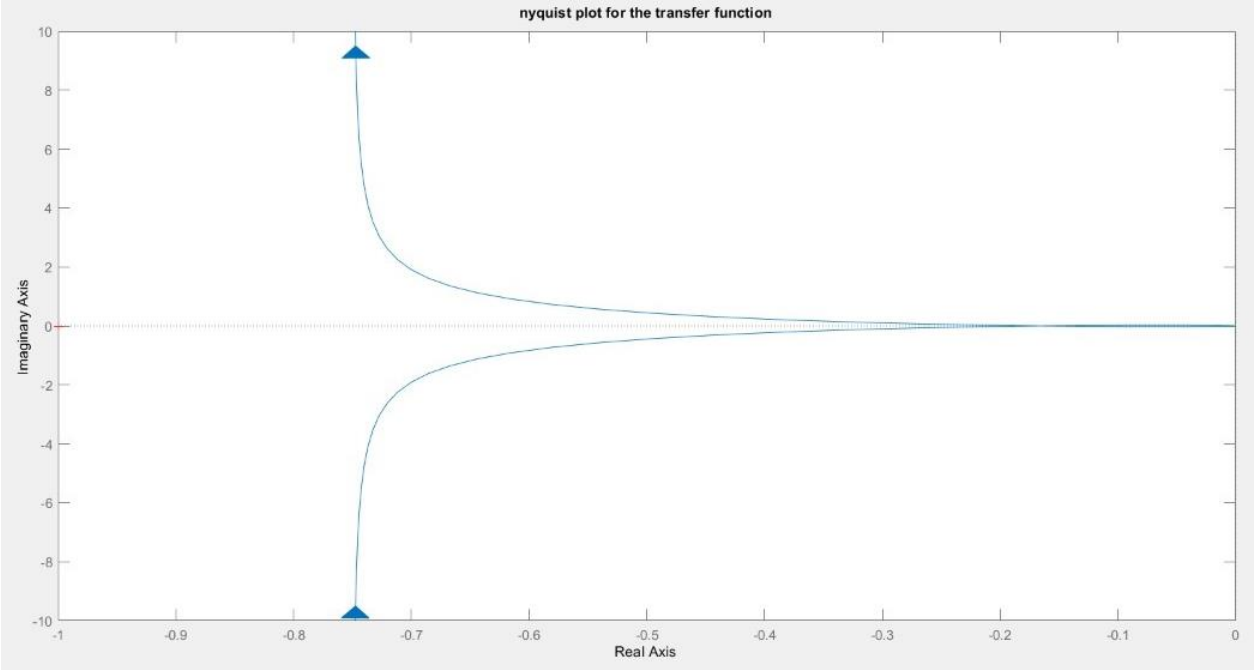
2.G(s)=1/s(s+1)(s+2)

```
1      %%nyquist plot for the transfer function
2 -    p=[1]
3 -    q=[1 3 2 0]
4 -    g1=tf(p,q);
5 -    margin(g1);
6 -    figure(1);
7 -    nyquist(g1);
8 -    title('nyquist plot for the transfer function');
9 -    figure(2)
10 -   bode(g1);
11 -   margin(g1);
12 -   title('bode plot for the transfer function');
13 -   figure(3);
14 -   rlocus(g1);
15 -   title('root locus for the transfer function');
```

Root Locus



Nyquist Plot



Bode Plot