**Root Locus**

**Root Locus**

0.972　0.945　0.88　0.65
0.986
0.993
0.998
0.999

System: sys
Gain: 2.5
Pole: -0.000203 + 0.707i
Damping: 0.000287
Overshoot (%): 99.9
Frequency (rad/s): 0.707

0.999
0.998
0.993
0.986
0.972　0.945　0.88　0.65

Imaginary Axis (seconds$^{-1}$)

Real Axis (seconds$^{-1}$)

```
% Bode, Nyquist and Root Locus
sys = tf([-2 -1],[1 5 3])
figure(1)
pzmap(sys)
grid
figure(2)
margin(sys)
[Gm,Pm,Wcg,Wcp] = margin(sys)
grid
figure(3)
nyquist(sys)
grid
figure(4)
rlocus(sys)
grid
figure(5)
step(sys)
grid
stepinfo(sys)


sys =

    -2 s - 1
  --------------
  s^2 + 5 s + 3

Continuous-time transfer function.


Gm =

    2.5000


Pm =

   Inf


Wcg =

    0.7071


Wcp =

   NaN


ans =
```
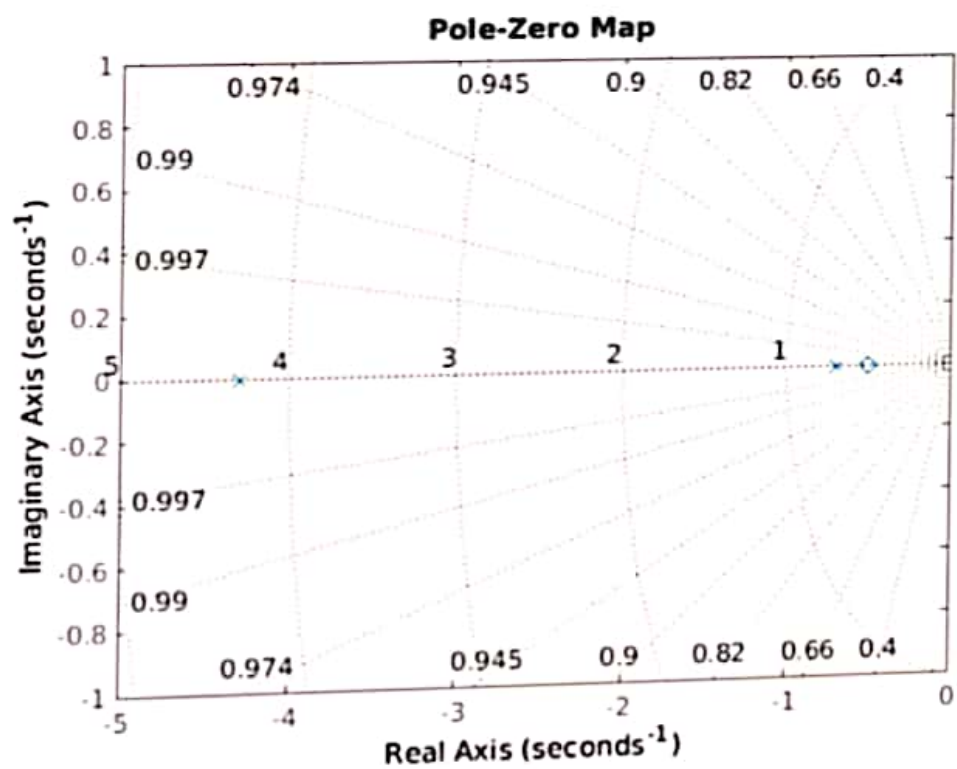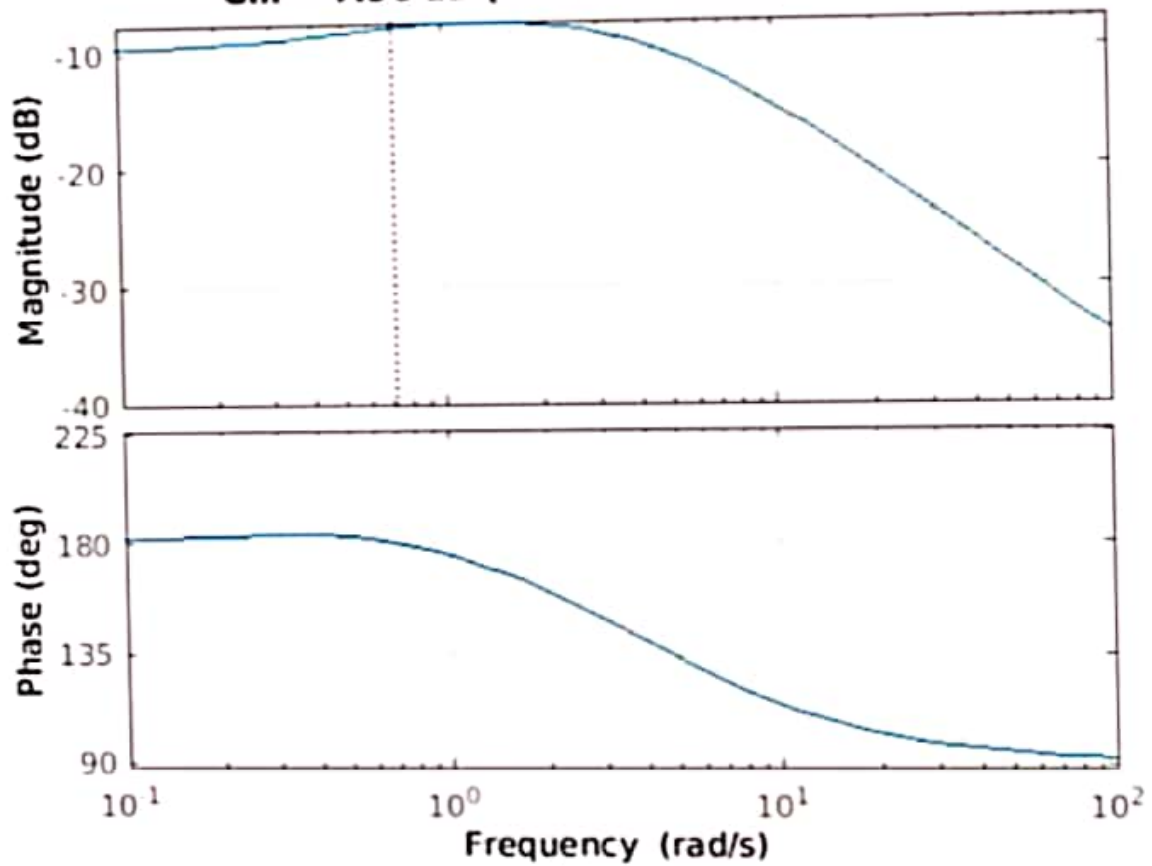
```
struct with fields:

      RiseTime: 0.2360
   SettlingTime: 4.5302
    SettlingMin: -0.4075
    SettlingMax: -0.3022
      Overshoot: 22.2557
     Undershoot: 0
           Peak: 0.4075
       PeakTime: 0.8134
```

**Pole-Zero Map**

## Bode Diagram
**Gm = 7.96 dB (at 0.707 rad/s) , Pm = Inf**



## Nyquist Diagram

## Root Locus



## Step Response