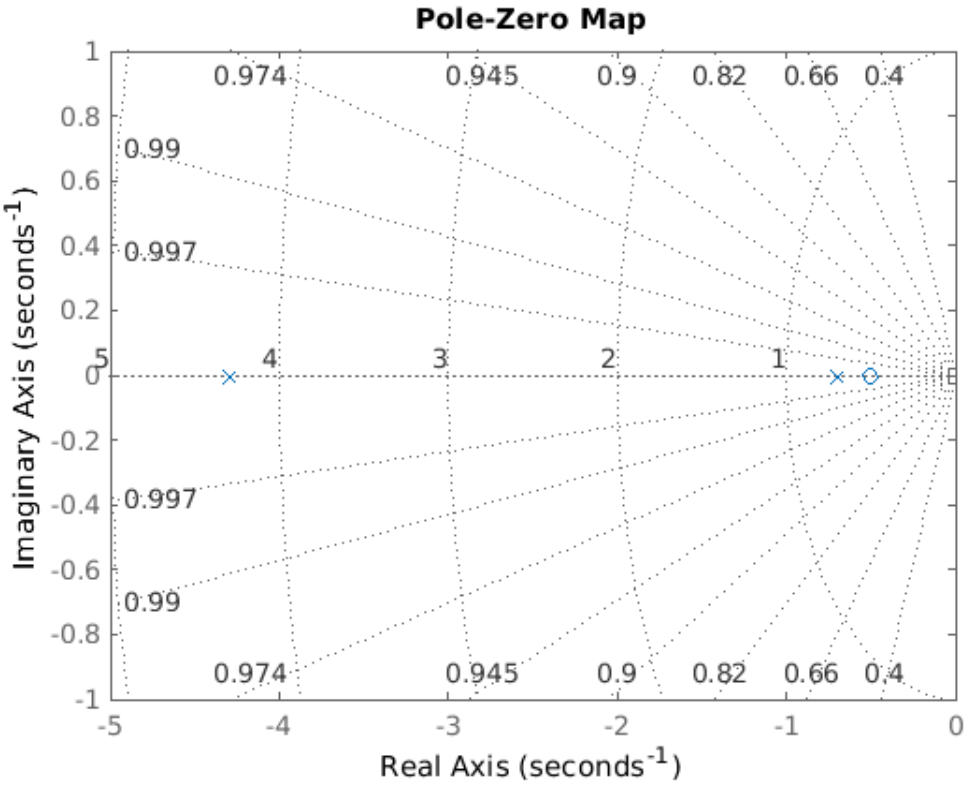
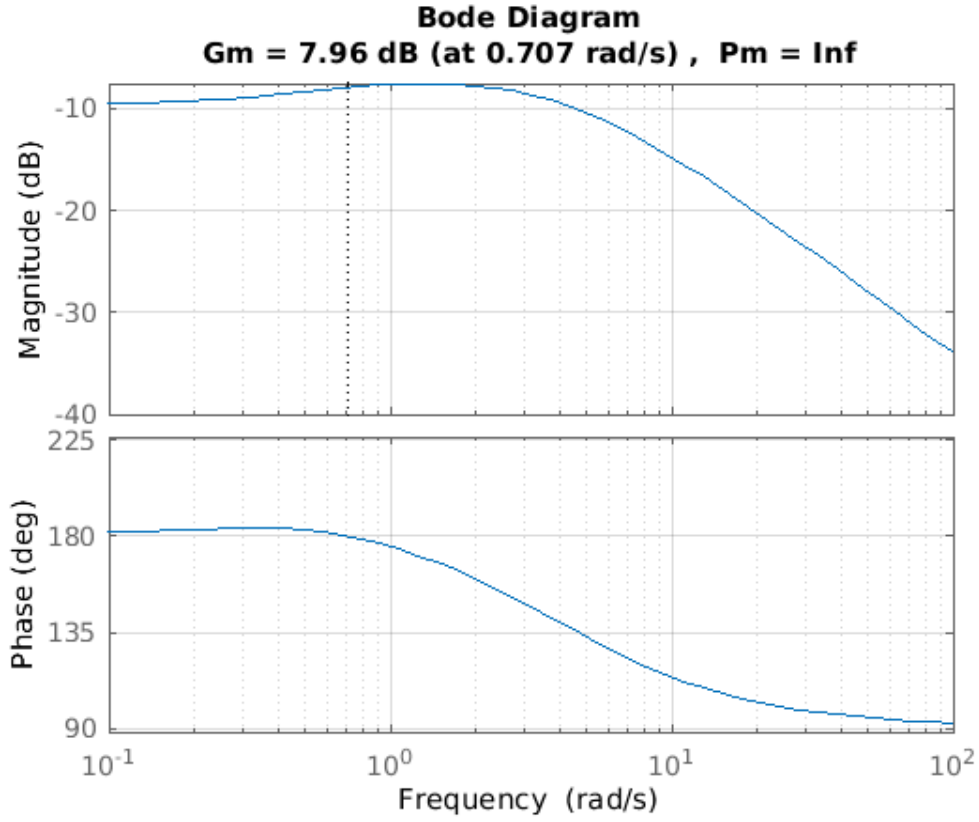
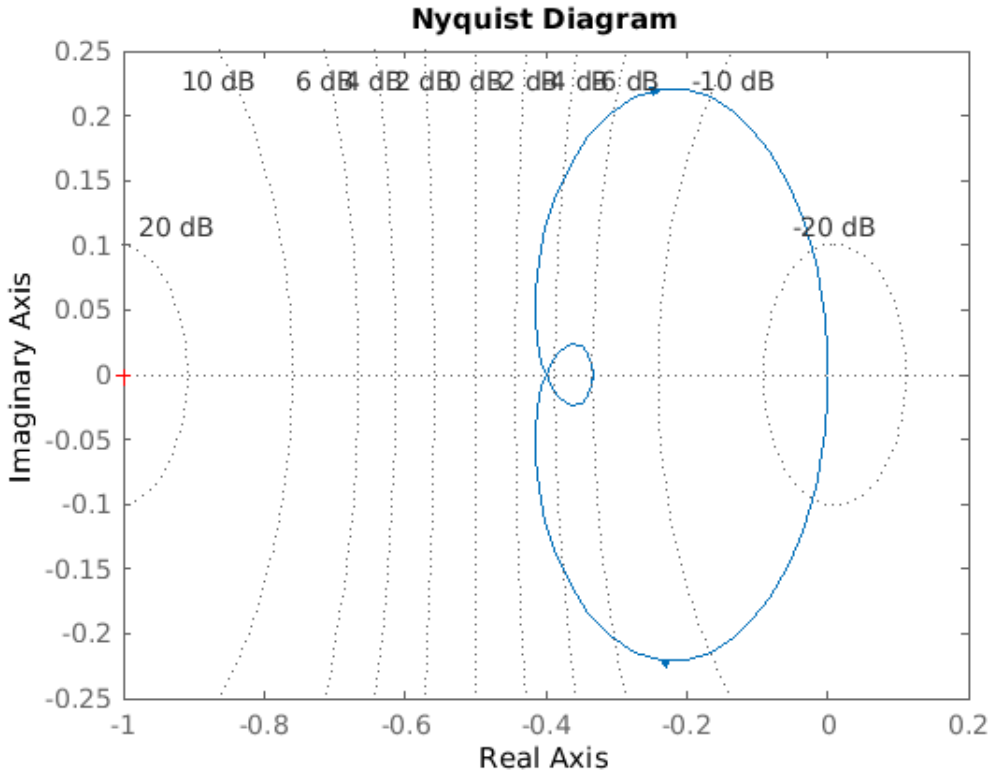
```
% Bode, Nyquist and Root Locus
sys = tf([-2 -1],[1 5 3])
figure(1)
pzmap(sys)
grid
figure(2)
margin(sys)
[Gm,Pm,Wcg,Wcp] = margin(sys)
grid
figure(3)
nyquist(sys)
grid
figure(4)
rlocus(sys)
grid
figure(5)
step(sys)
grid
stepinfo(sys)
```

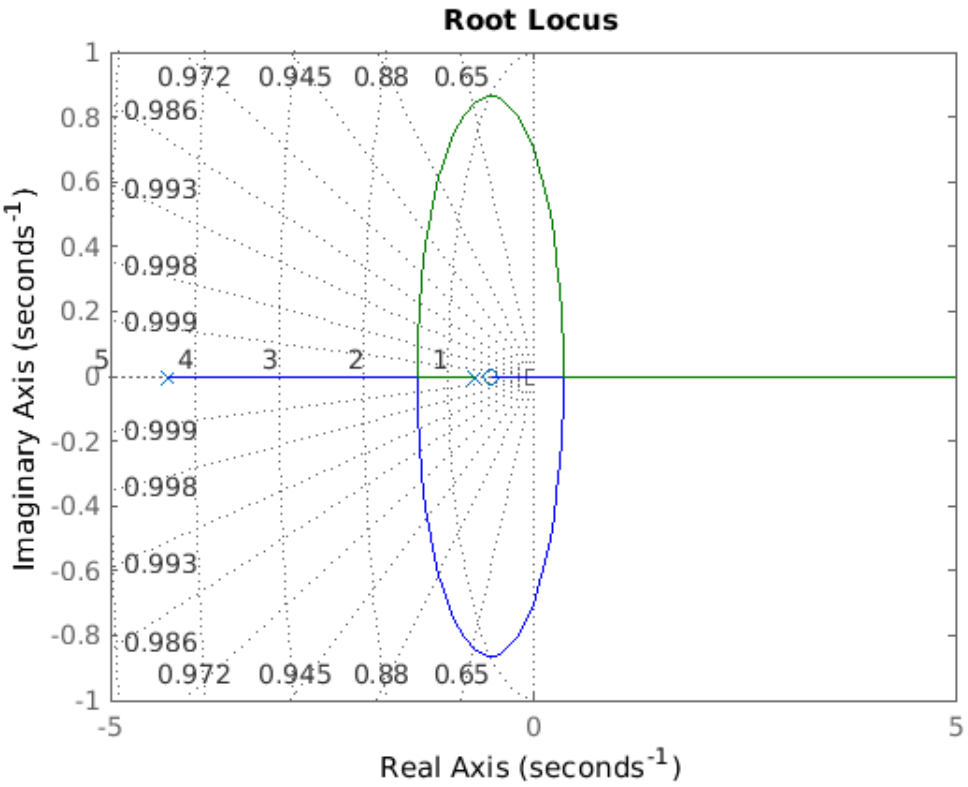
```
sys =

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

Continuous-time transfer function.


Gm =

    2.5000


Pm =

   Inf


Wcg =

    0.7071


Wcp =

   NaN


ans =
```

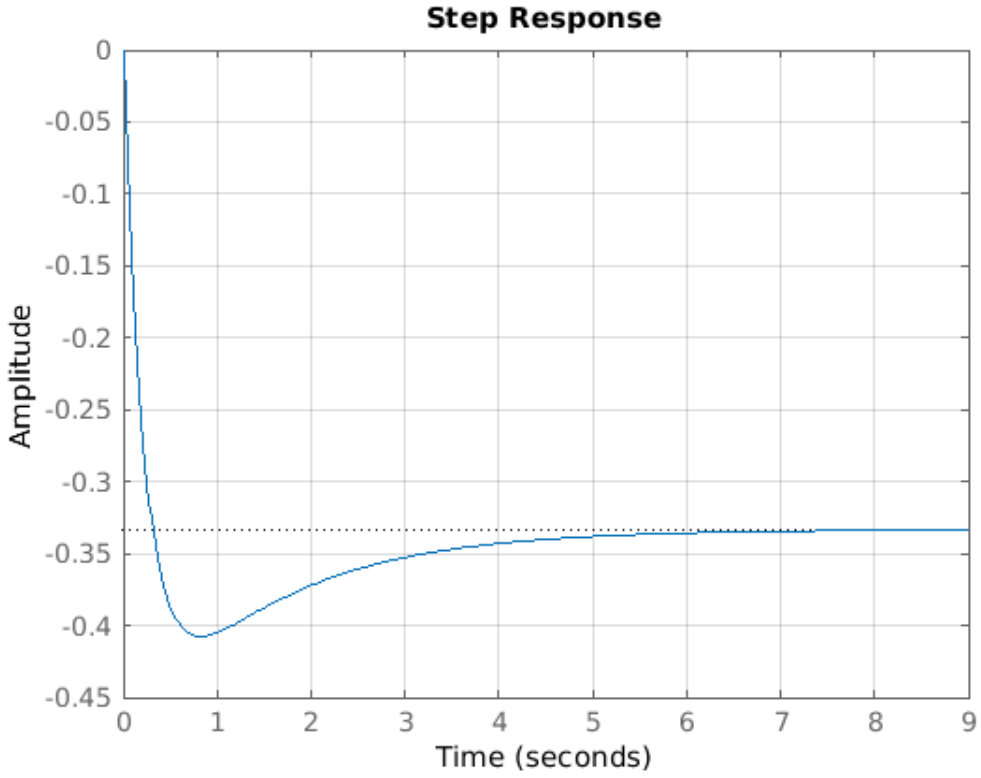
```
struct with fields:

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




Bode Diagram
Gm = 7.96 dB (at 0.707 rad/s) , Pm = Inf
Magnitude (dB)
-10
-20
-30
-40
Phase (deg)
225
180
135
90
10^{-1}
10^{0}
10^{1}
10^{2}
Frequency (rad/s)


Nyquist Diagram
10 dB
6 dB
4 dB
2 dB
0 dB
-2 dB
-4 dB
-6 dB
-10 dB
20 dB
-20 dB
Imaginary Axis
0.25
0.2
0.15
0.1
0.05
0
-0.05
-0.1
-0.15
-0.2
-0.25
-1
-0.8
-0.6
-0.4
-0.2
0
0.2
Real Axis


Root Locus
Imaginary Axis (seconds-1)
Real Axis (seconds-1)
0.972
0.945
0.88
0.65
0.986
0.993
0.998
0.999
5
4
3
2
1


Step Response
Amplitude
Time (seconds)

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