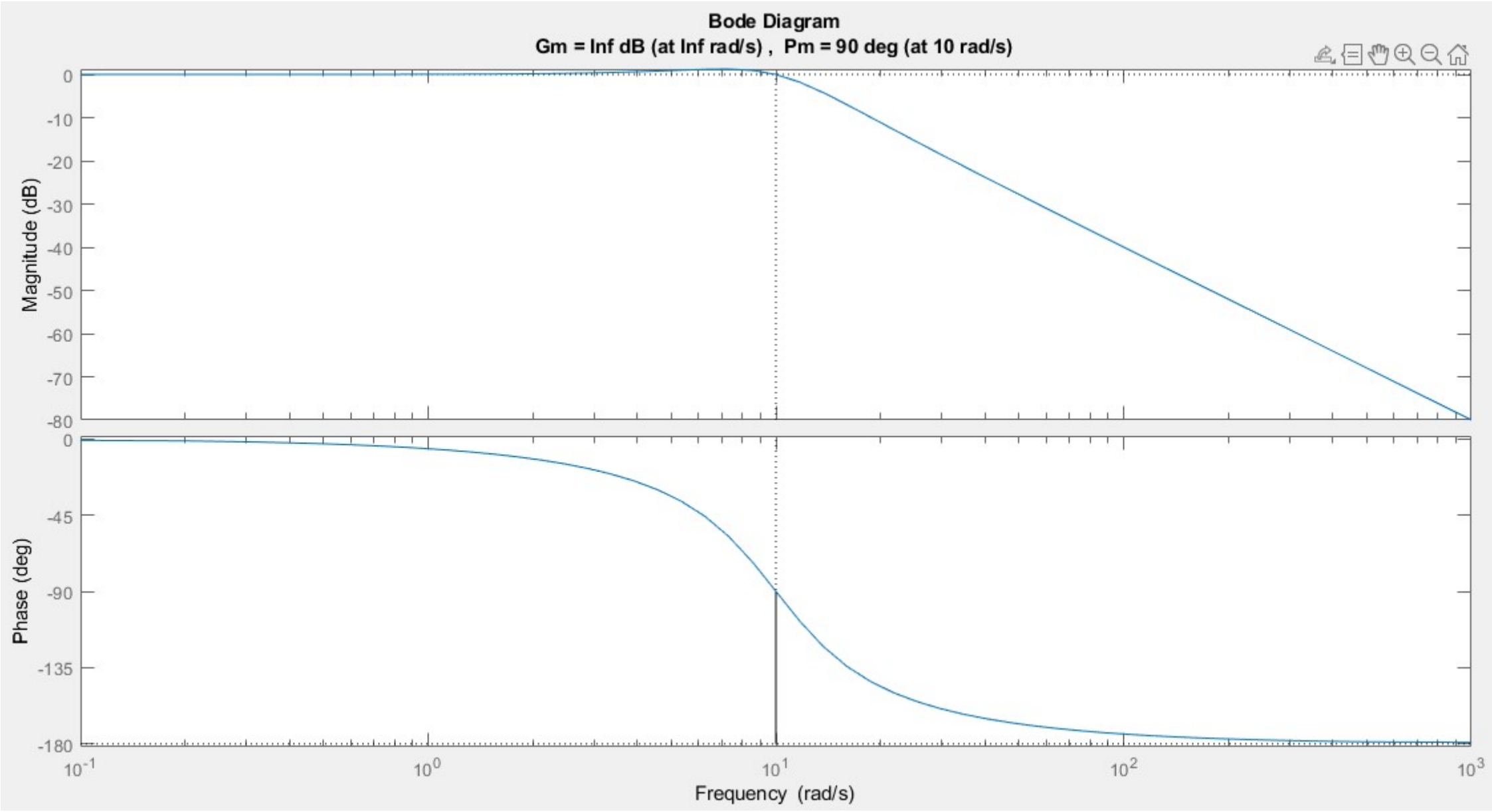
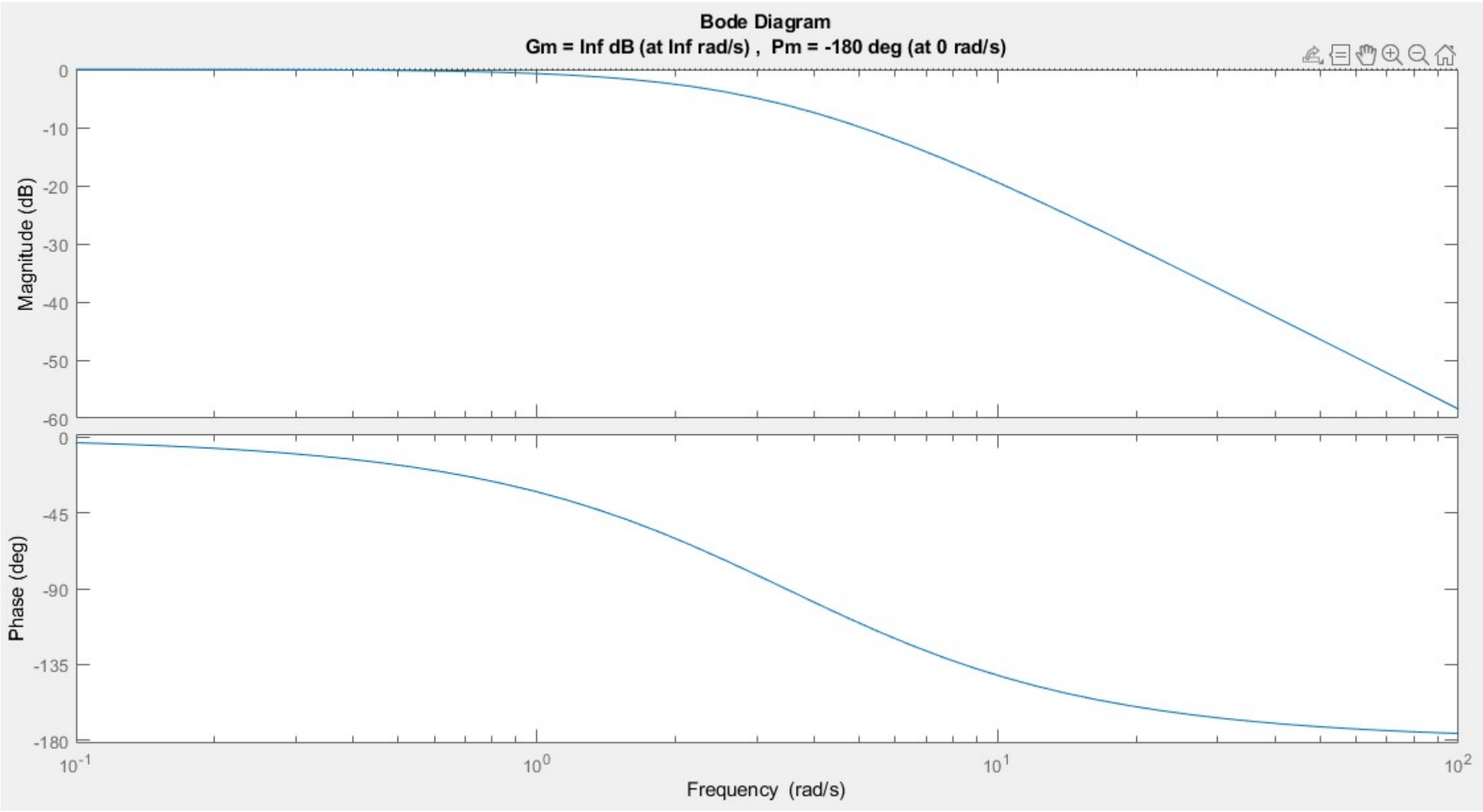
```
%%FREQUENCY RESOPNSE OF A SECOND ORDER SYSTEM
w=10
e=0.5
num=[w*w]
den=[1 2*e*w w*w]
sys=tf(num,den)
[mr,wr]=getPeakGain
wb=bandwidth(sys)
bode(sys)
margin(sys)
```

```
>> Untitled

w =

    10


e =

    0.5000


num =

   100


den =

     1    10   100


sys =

        100
  ----------------
  s^2 + 10 s + 100

Continuous-time transfer function.


mr =

    1.1547


wr =

    7.0610


wb =

   12.7119

>>
```


Bode Diagram
Gm = Inf dB (at Inf rad/s) , Pm = 90 deg (at 10 rad/s)
Magnitude (dB)
0
-10
-20
-30
-40
-50
-60
-70
-80
Phase (deg)
0
-45
-90
-135
-180
10^{-1}
10^{0}
10^{1}
10^{2}
10^{3}
Frequency (rad/s)

```
%%Frequency Response of a Second Order System
w=sqrt(12)
e=3.5/3.464
num=[w*w]
den=[1 2*e*w w*w]
sys=tf(num,den)
figure(1)
[mr,wr]=getPeakGain(sys)
wb=bandwidth(sys)
bode(sys)
margin(sys)
```

```
>> Untitled12

w =

    3.4641


e =

    1.0104


num =

   12.0000


den =

    1.0000    7.0002   12.0000


sys =

         12
  --------------
  s^2 + 7 s + 12

Continuous-time transfer function.


mr =

     1


wr =

     0


wb =

    2.1926

>>
```


Bode Diagram
Gm = Inf dB (at Inf rad/s) , Pm = -180 deg (at 0 rad/s)
Magnitude (dB)
0
-10
-20
-30
-40
-50
-60
Phase (deg)
0
-45
-90
-135
-180
10^-1
10^0
10^1
10^2
Frequency (rad/s)