Q2_program

April 5, 2023

[ ]:
```
import matplotlib.pyplot as plt
from control import tf
import control
```

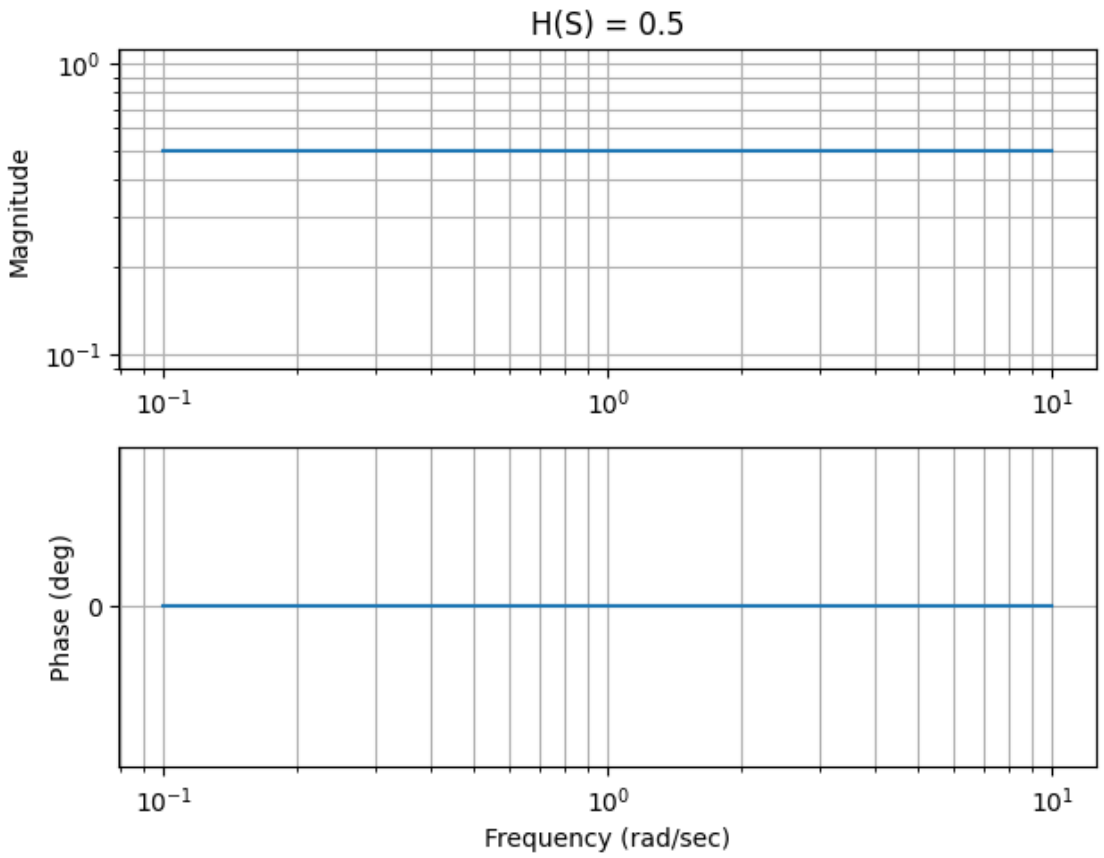
Question 2:A

[ ]:
```
G = tf([0.5],[1])
print(G)
mag,phase,omega = control.bode(G)

plt.tight_layout()
ax1,ax2 = plt.gcf().axes     # get subplot axes
plt.sca(ax1)                 # magnitude plot
plt.title("H(S) = 0.5")
```

```
0.5
---
 1
```

[ ]:
```
Text(0.5, 1.0, 'H(S) = 0.5')
```

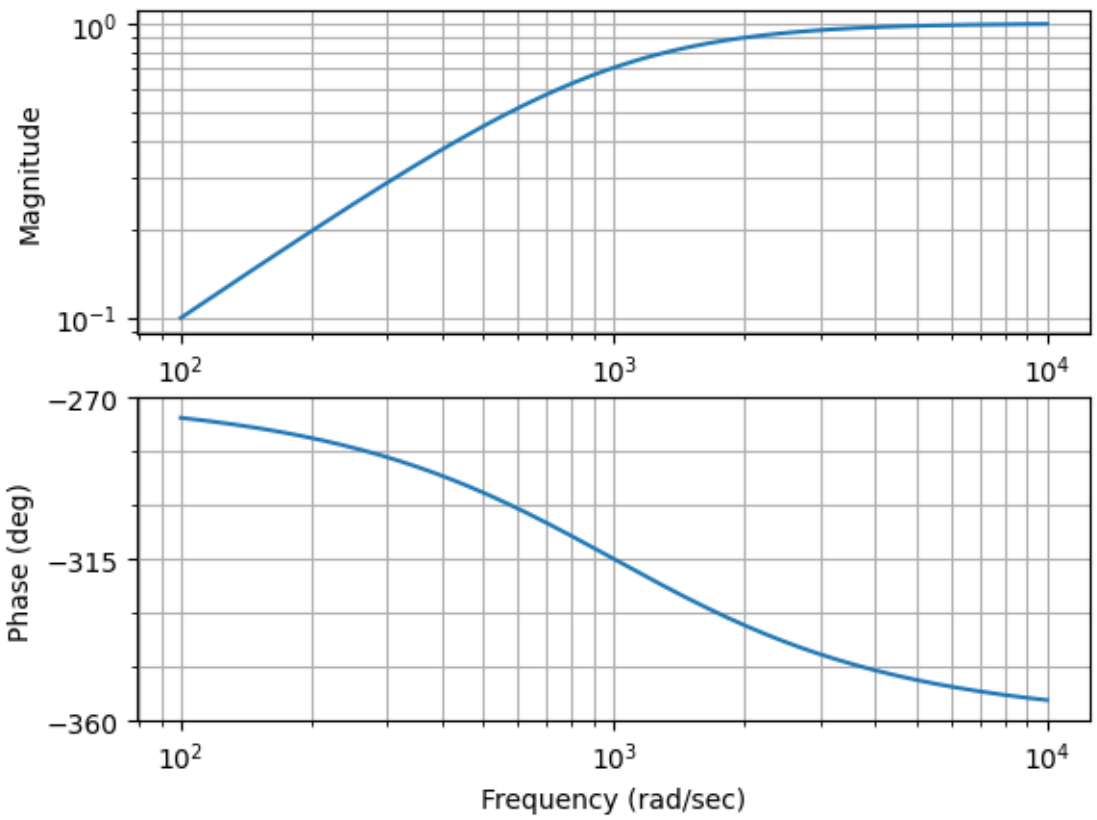


Question 2:B

[ ]:
```
num = [1, 0]
den = [1, 10**3]

G1 = tf(num,den)
print(G1)
mag,phase,omega = control.bode(G1)
```

```
   s
--------
s + 1000
```

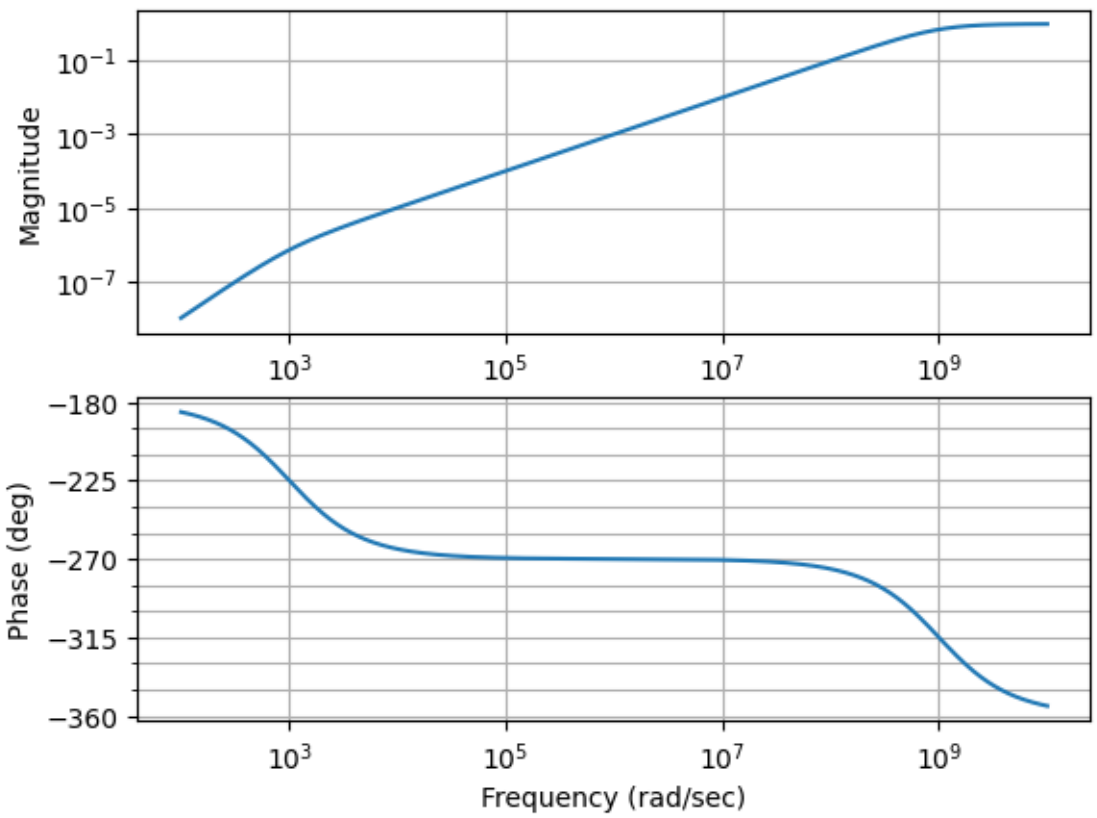


Question 2:C;

[ ]:
```
num = [1, 0, 0]
den = [1, 10**9, 10**12]

G3 = tf(num,den)
print(G3)
mag,phase,omega = control.bode(G3)
```

```
          s^2
----------------------
s^2 + 1e+09 s + 1e+12
```

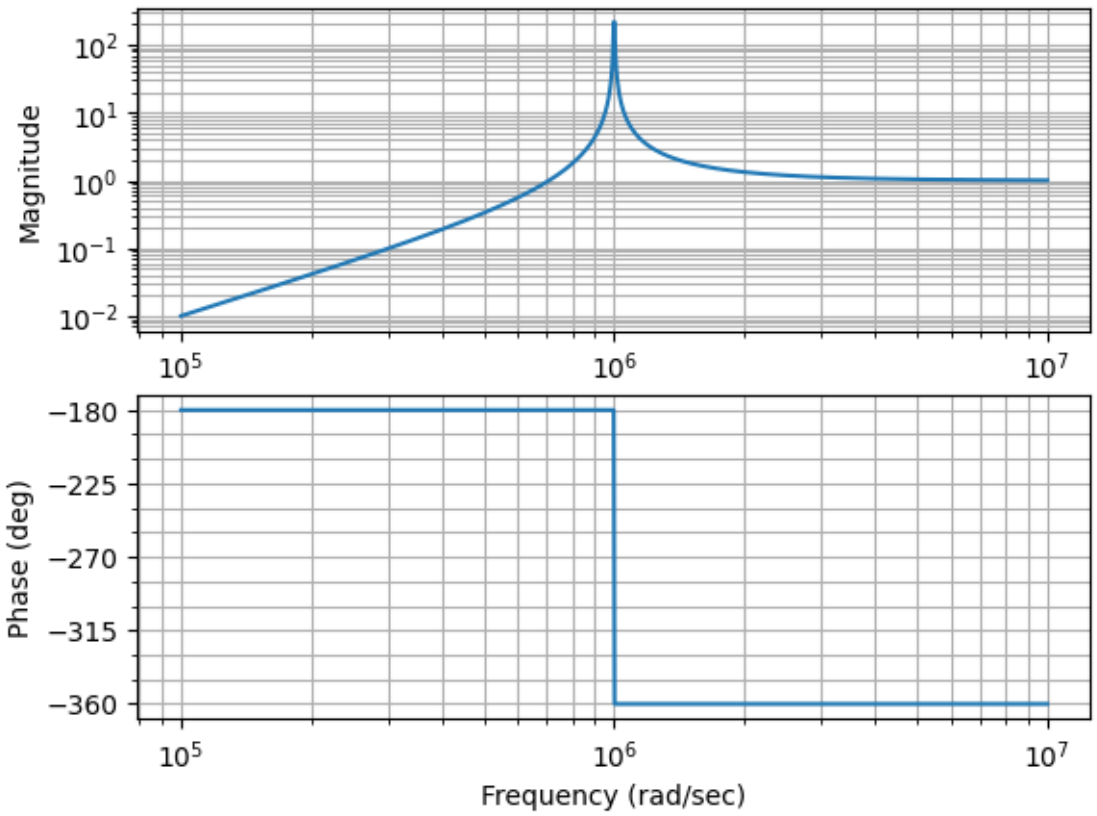


Question 2:D

[ ]:
```
num = [1, 0, 0]
den = [1, 0, 10**12]

G4 = tf(num,den)
print(G4)
mag,phase,omega = control.bode(G4)
```

```
    s^2
-----------
s^2 + 1e+12
```


Magnitude
10^{2}
10^{1}
10^{0}
10^{-1}
10^{-2}
10^{5}
10^{6}
10^{7}
Phase (deg)
−180
−225
−270
−315
−360
10^{5}
10^{6}
10^{7}
Frequency (rad/sec)