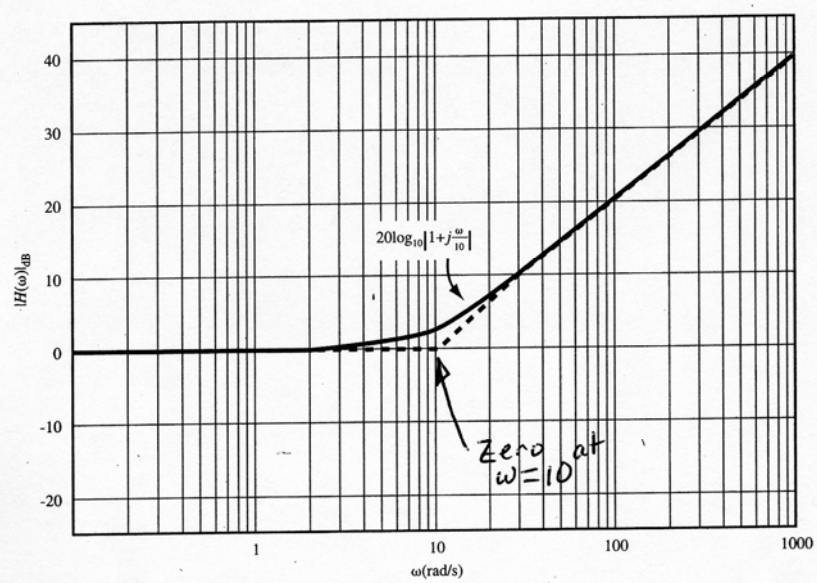
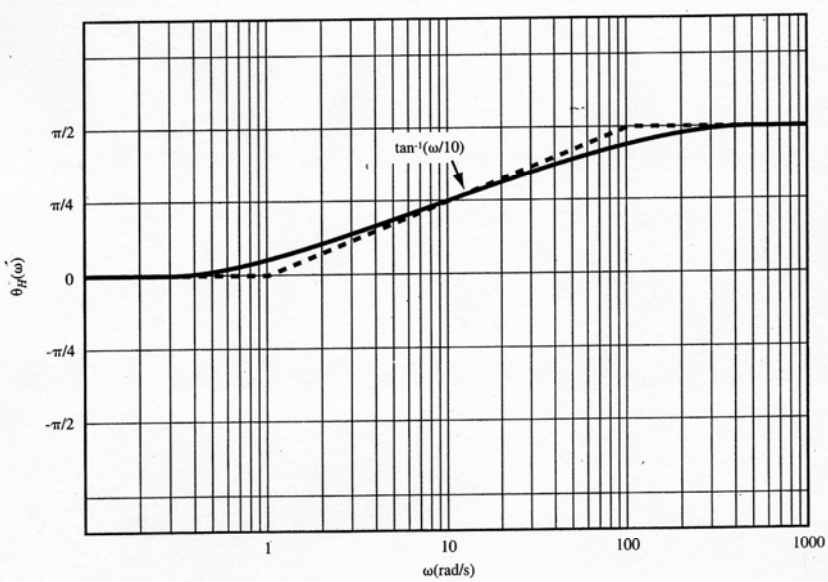
EE322-Bode Examples

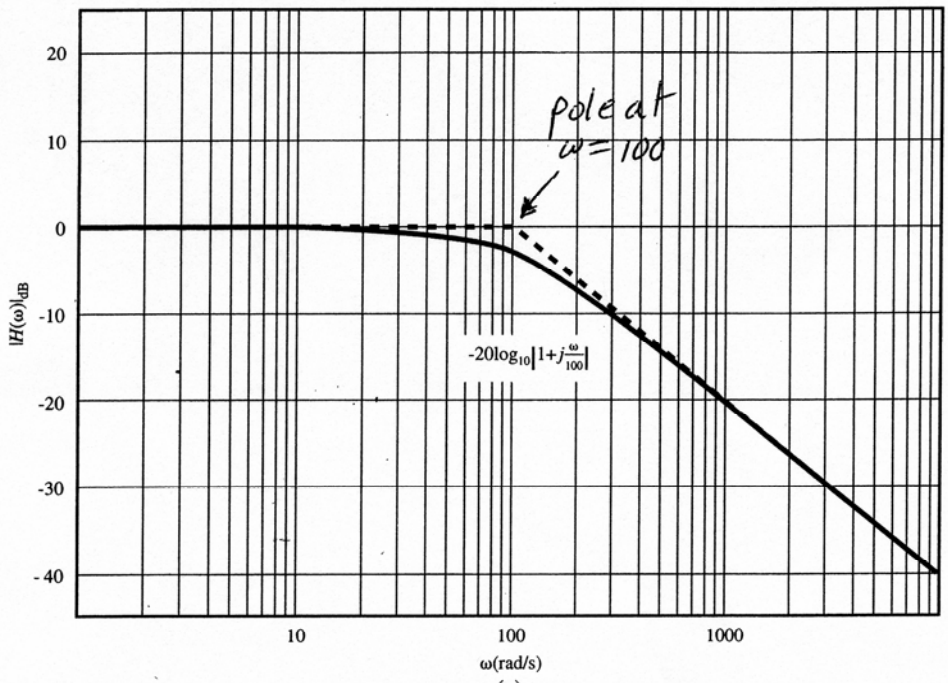
$$H(j\omega) = 1 + \frac{j\omega}{10}$$



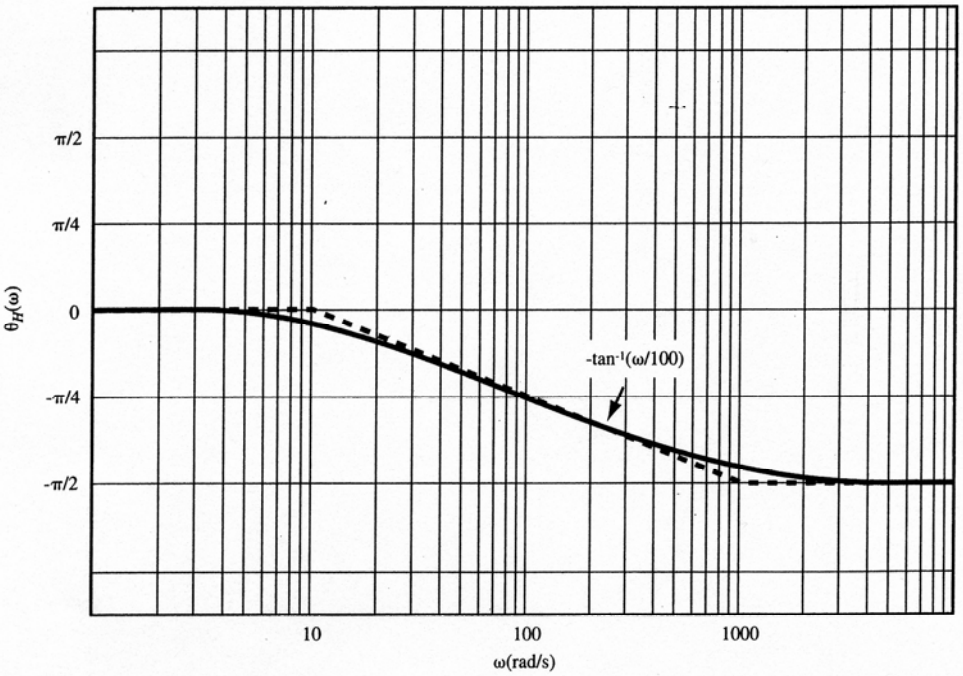
(a)



$$H(j\omega) = \frac{1}{1 + \frac{j\omega}{100}}$$

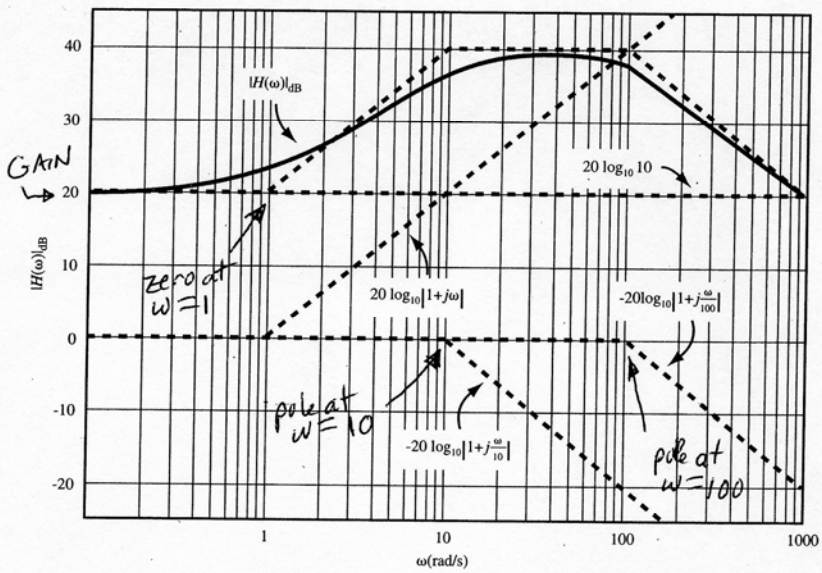


(*a*)

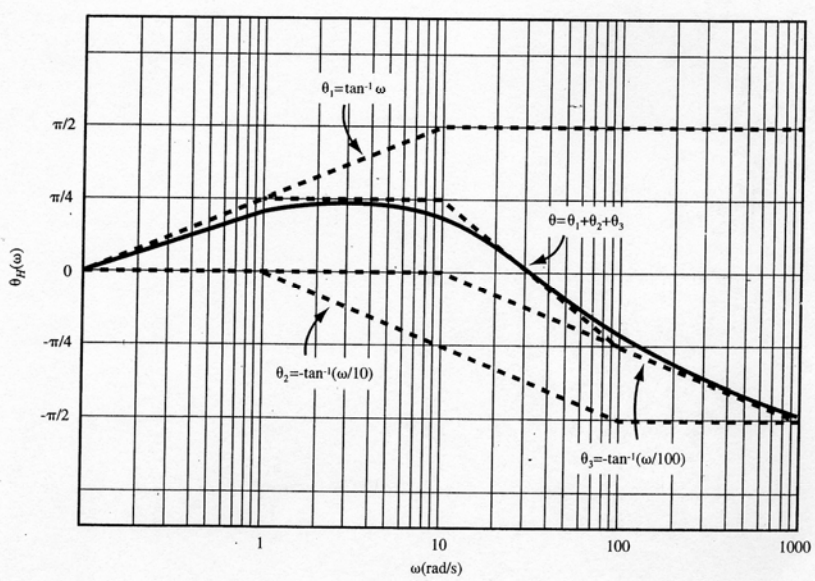


(*b*)

$$H(j\omega) = \frac{10(1+j\omega)}{\left(1+\frac{j\omega}{10}\right)\left(1+\frac{j\omega}{100}\right)}$$



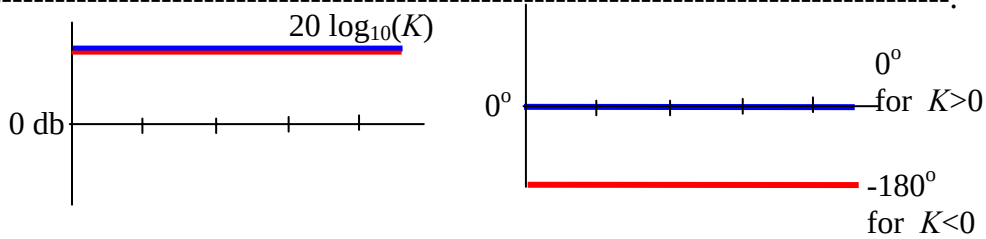
(*a*)



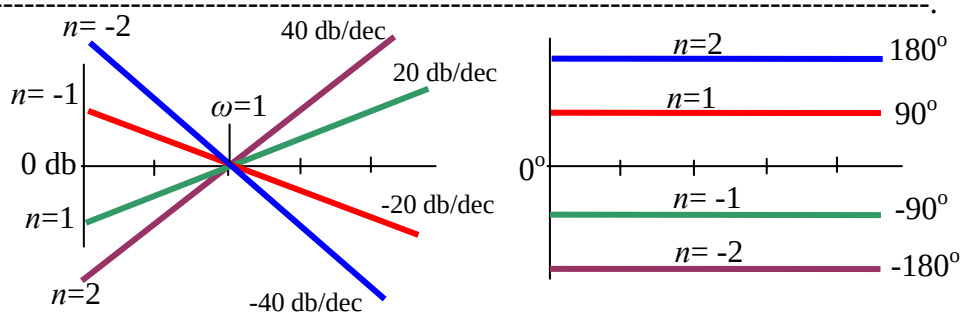
Summary of Sketched (Approximate) Bode Plot Terms:

Term Type: Log Magnitude Phase Angle

Constant Gain K

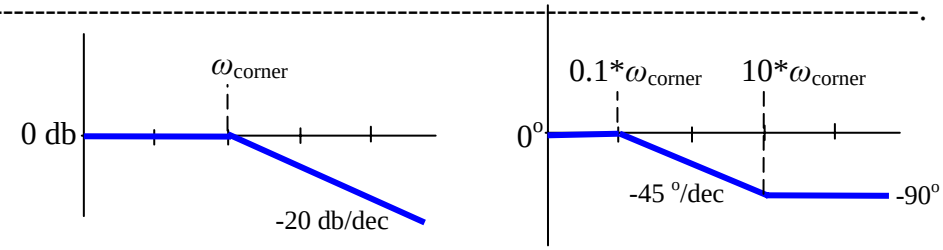


Pole/zero at origin $(j\omega)^n$



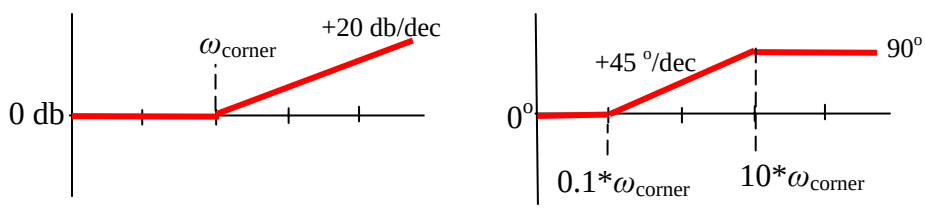
1st order Pole not at origin

$$\frac{1}{\frac{j\omega}{\omega_{corner}}+1}$$



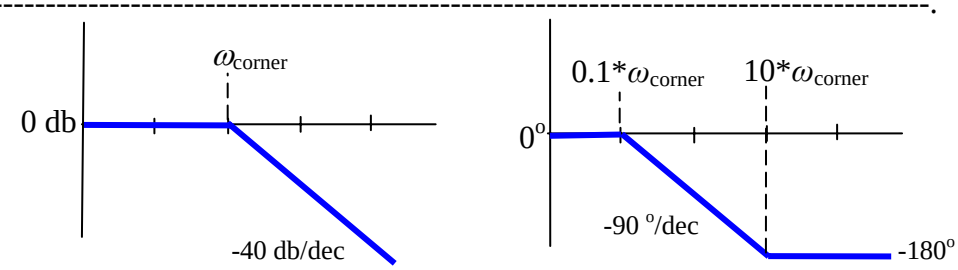
1st order Zero not at origin

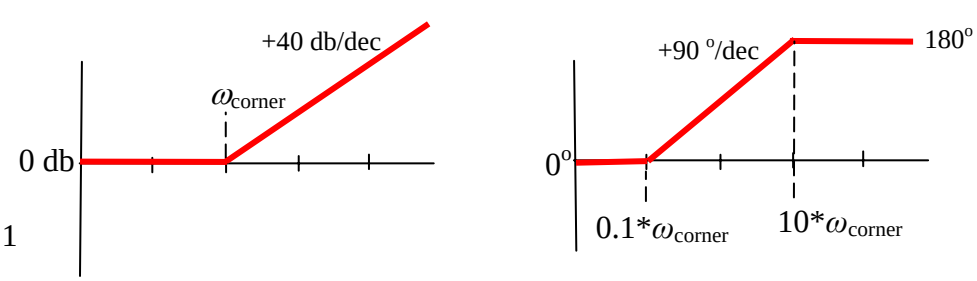
$$\frac{j\omega}{\omega_{corner}}+1$$



2nd order Pole

$$\frac{1}{\left(\frac{j\omega}{\omega_{corner}}\right)^2+2\zeta\left(\frac{j\omega}{\omega_{corner}}\right)+1}$$



2nd order Zero

$$\left(\frac{j\omega}{\omega_{corner}}\right)^2+2\zeta\left(\frac{j\omega}{\omega_{corner}}\right)+1$$