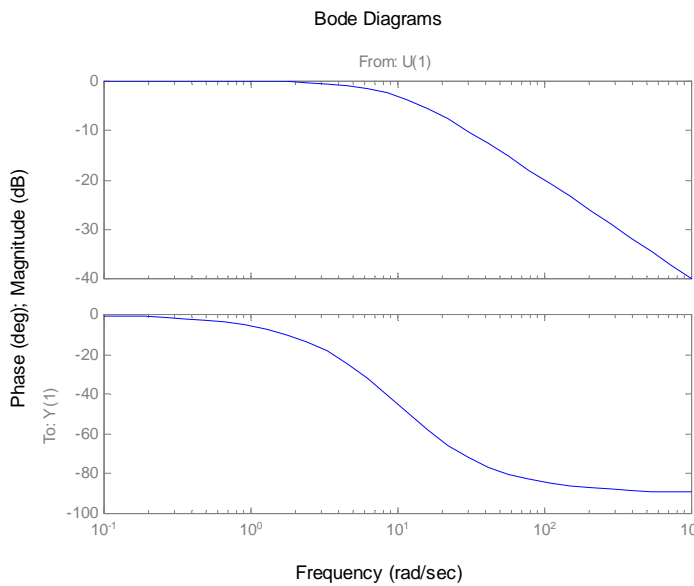


## Diagrama de Bode

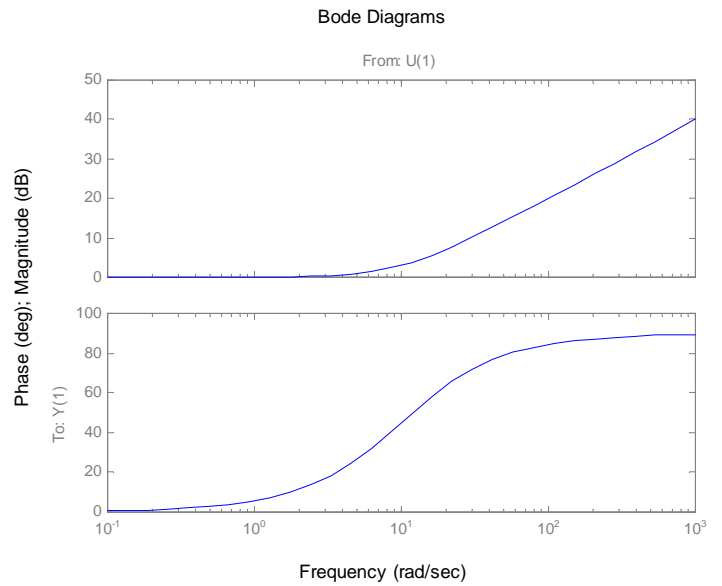
### a) Pólo Real no SPLE

$$T(s) = \frac{p}{s + p}$$



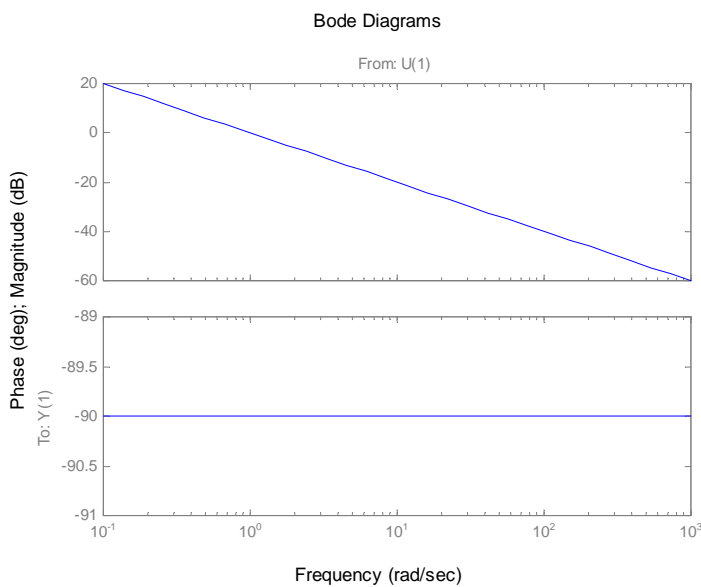
### b) Zero Real no SPLE

$$T(s) = \frac{s + z}{z}$$



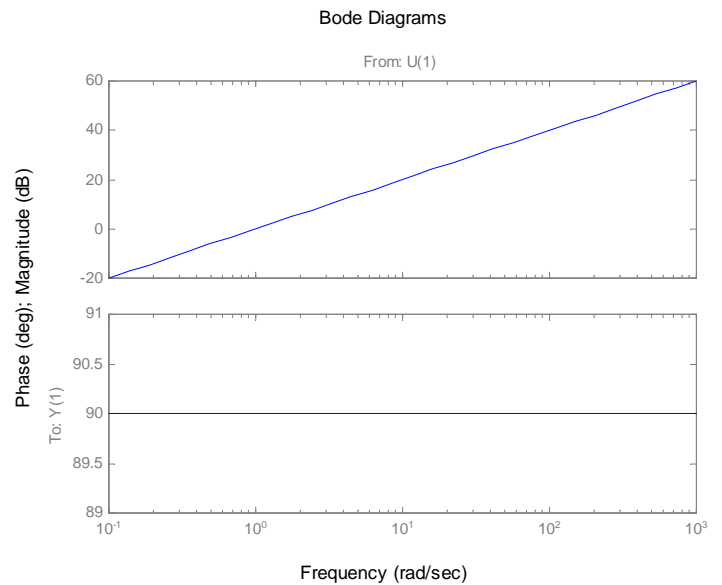
### c) Pólo na Origem

$$T(s) = \frac{k}{s}$$



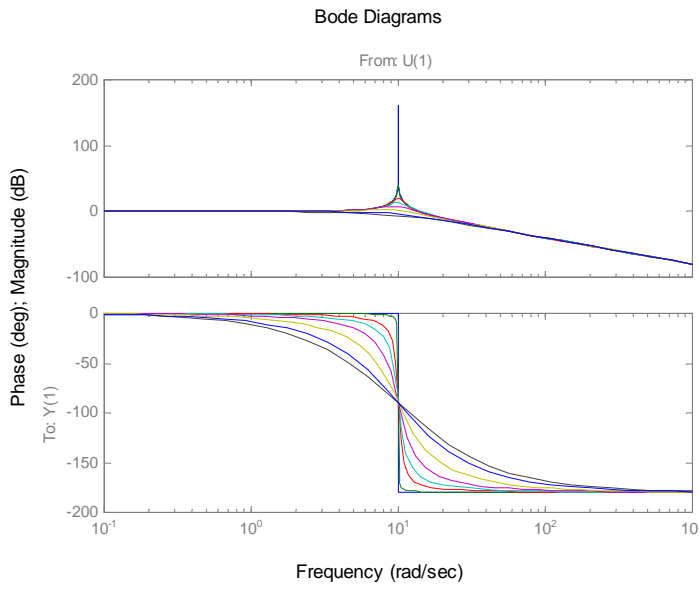
### d) Zero na Origem

$$T(s) = k \cdot s$$

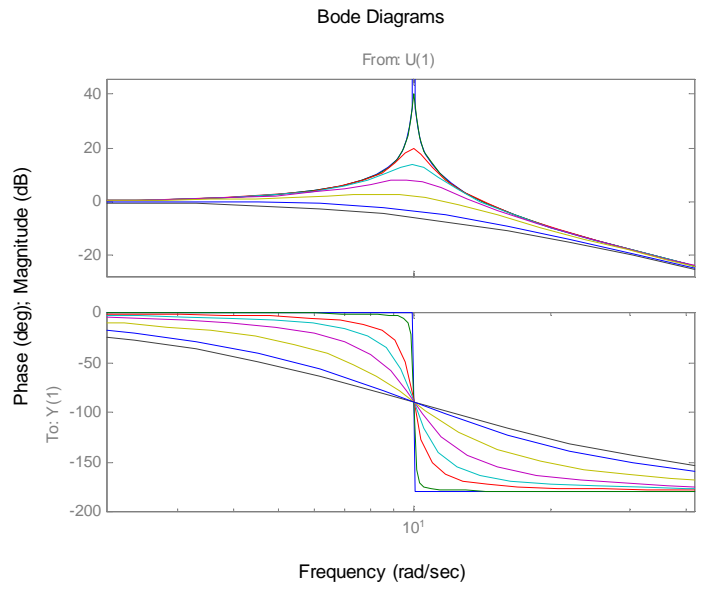


**e) Pólo Complexo Conjugado no SPLE:**

$$T(s) = \frac{\omega_p^2}{s^2 + \frac{\omega_p}{Q}s + \omega_p^2}$$

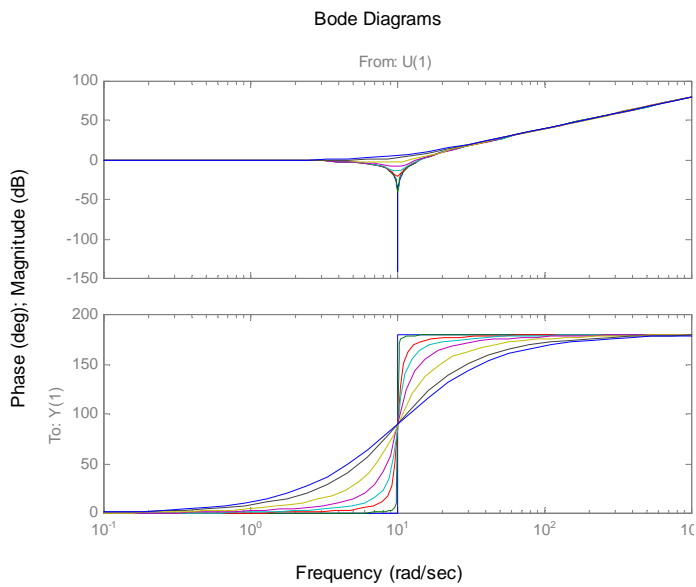


Detalhe:

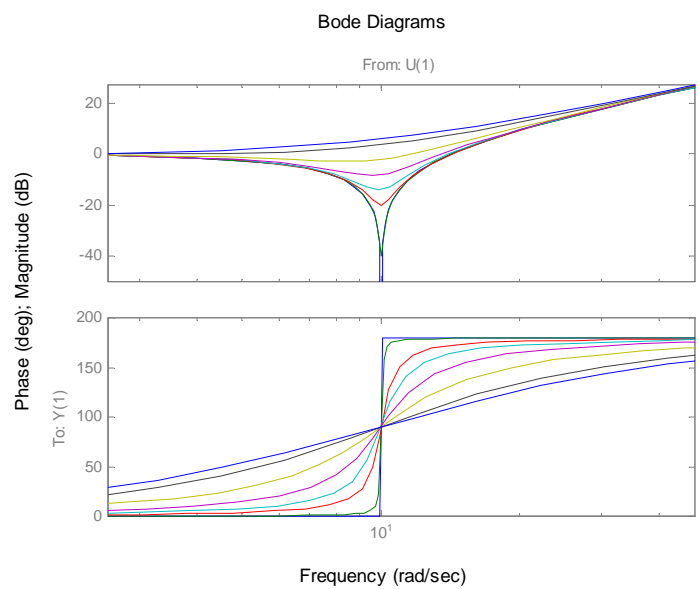


**f) Zero Complexo Conjugado no SPLE**

$$T(s) = \frac{s^2 + \frac{\omega_z}{Q}s + \omega_z^2}{\omega_z^2}$$

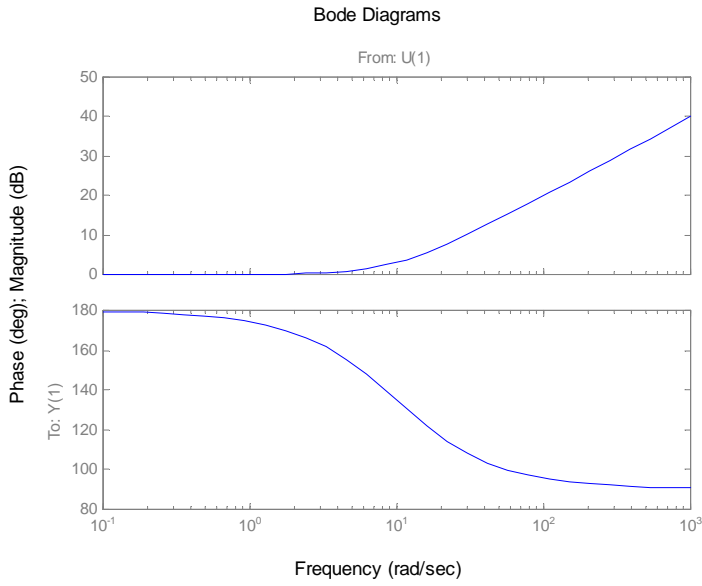


Detalhe:



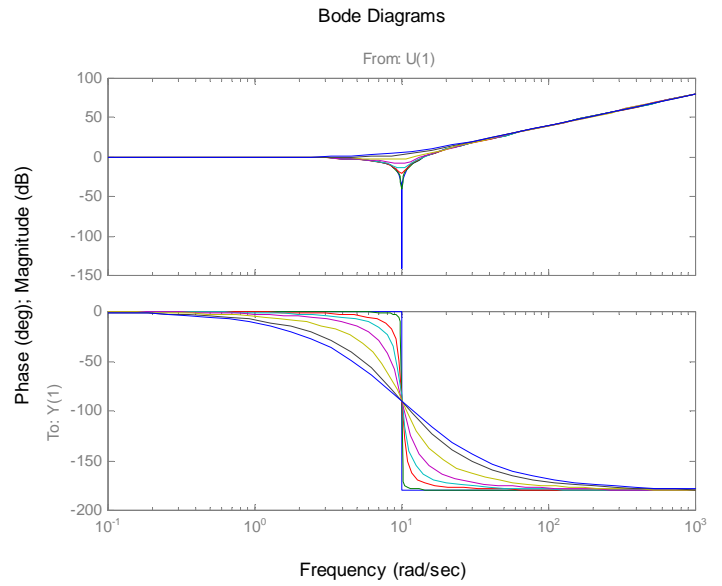
### g) Zero Real no SPLD

$$T(s) = \frac{s - z}{z}$$



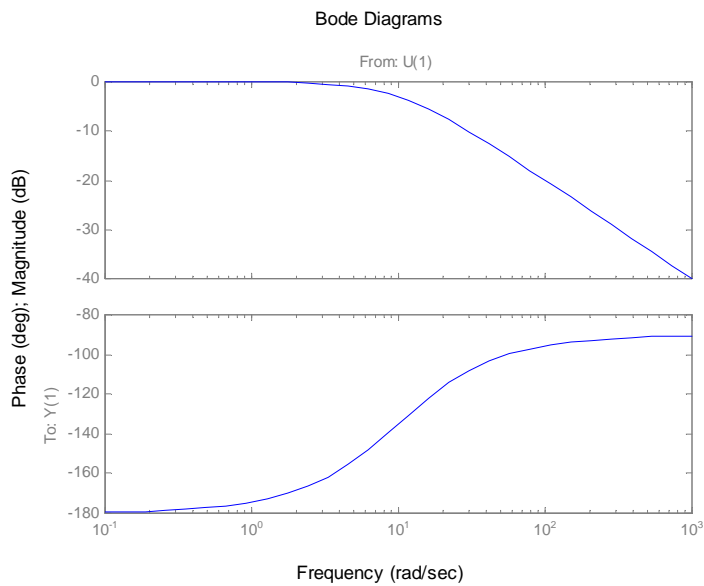
### h) Zero Complexo Conjugado no SPLD

$$T(s) = \frac{s^2 - \frac{\omega_z}{Q}s + \omega_z^2}{\omega_z^2}$$



### i) Pólo Real no SPLD

$$T(s) = \frac{p}{s - p}$$



### j) Pólo Complexo Conjugado no SPLD

$$T(s) = \frac{\omega_p^2}{s^2 - \frac{\omega_p}{Q}s + \omega_p^2}$$

