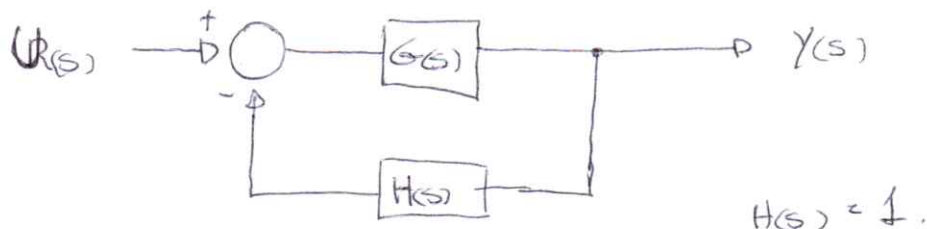


Resposta em frequência.

exemplo



$$G(s) = \frac{1}{s+1} \quad \text{F.T.M.A}$$

GH

$$U(t) = \sin(2t)$$

$$\omega_n = 2$$

$$\begin{aligned} G(j2) &= \frac{1}{j2+1} = \left| \frac{1}{j2+1} \right| \cdot e^{\arg \left| \frac{1}{j2+1} \right|} \\ &= \frac{1}{\sqrt{2^2+1^2}} \cdot e^{-j1,1} \\ &= \frac{1}{\sqrt{5}} \cdot e^{-j1,1} \end{aligned}$$

$$Y_{ss}(t) = \frac{1}{\sqrt{5}} \cdot \sin(2t - 1,1)$$

outro método ?

$$\begin{aligned} Y(s) &= G(s) \cdot U(s) = \frac{1}{s+1} \cdot \frac{2}{s^2+2^2} \\ &= \frac{2/s}{s+1} + \frac{2/s - (2/s)s}{s^2+2^2} \end{aligned}$$

como

$$\mathcal{L} \sum \sin(\omega t + \phi) = \frac{s \sin(\phi) + \omega \cos(\phi)}{s^2 + \omega^2}$$

vem

$$y(t) = 0,4 e^{-t} + \frac{1}{\sqrt{5}} \sin(2t - 1,1).$$