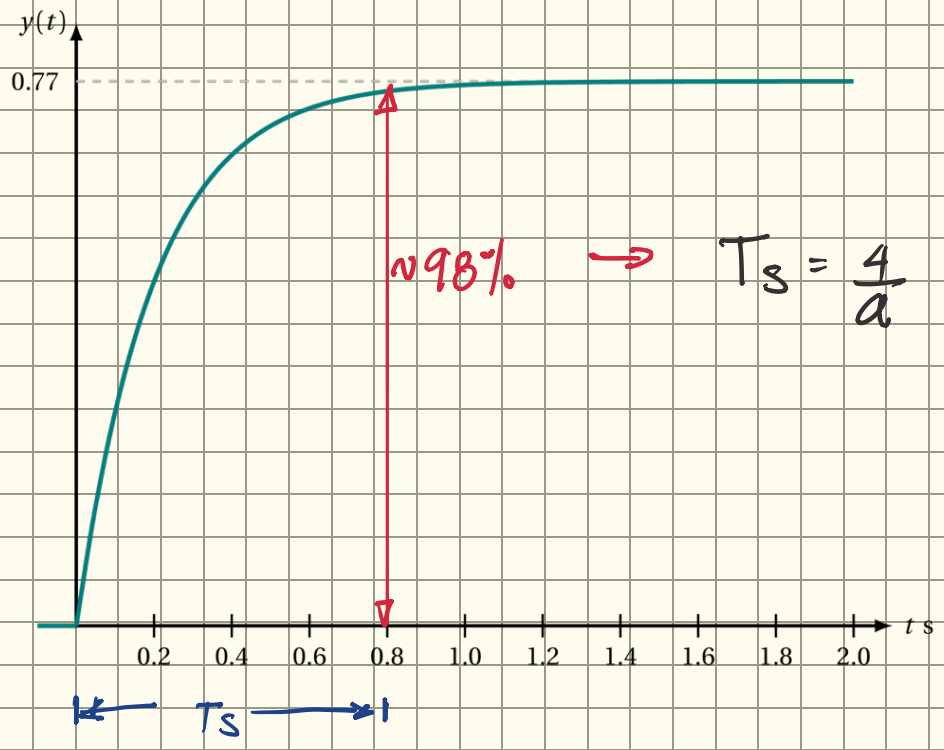
1



$$T_s = \frac{4}{a} \Rightarrow a = \frac{4}{0.8} = 5$$

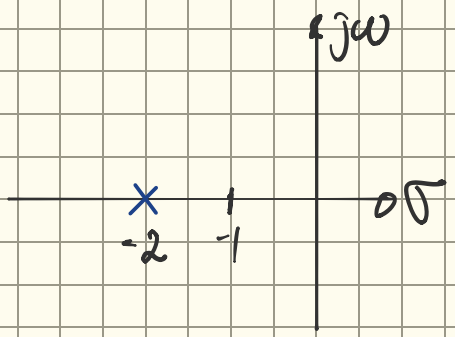
$$G(s) = \frac{5K}{s+5}$$

$$y_{ss} = \lim_{s \to 0} s\,Y(s) = \frac{5K}{5} = 0.77 \Rightarrow K = 0.77$$

$$G(s) = \frac{3.85}{s+5}$$

2

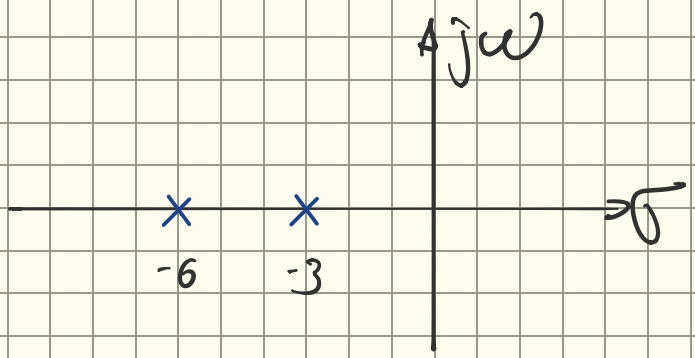
- $G_1(s) = \dfrac{2}{s+2}$



Polo: $s = -2$

$$c(t) = \boxed{1} - e^{-2t}$$

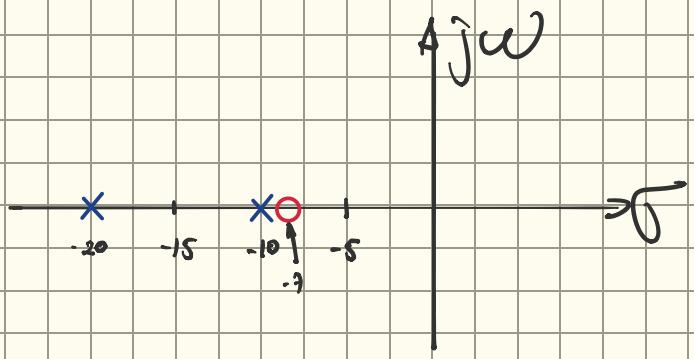
- $G_2(s) = \dfrac{5}{(s+3)(s+6)}$



Polos: $s: \begin{matrix} -3 \\ -6 \end{matrix}$

$$c(t) = \boxed{\frac{5}{18}} + k_1 e^{-3t} + k_2 e^{-6t}$$

* $G_3(s) = \dfrac{10s+70}{(s+10)(s+20)}$

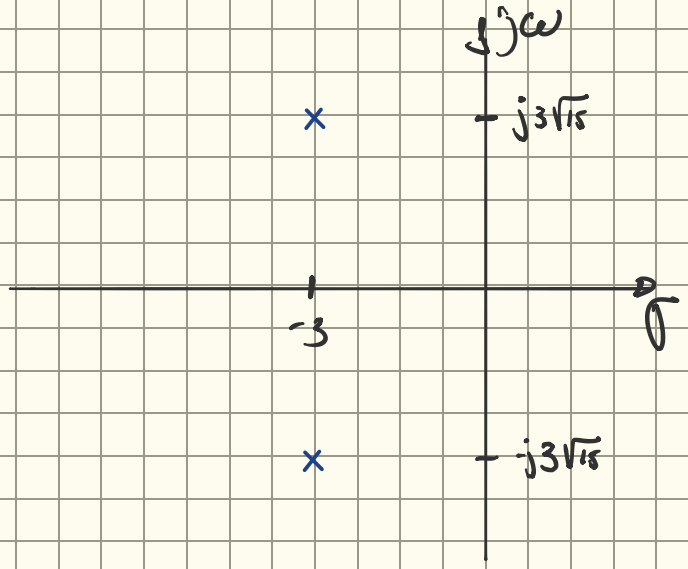


Polos $s = \begin{cases} -10 \\ -20 \end{cases}$

Cero $s = -7$

$$C(t) = \boxed{\frac{7}{20}} + K_1 e^{-10t} + K_2 e^{-20t}$$

* $G_4(s) = \dfrac{20}{s^2+6s+144}$



$\omega_n = 12, \quad 2\zeta\omega_n = 6$

$$\zeta = \frac{6}{24} = \frac{1}{4}$$

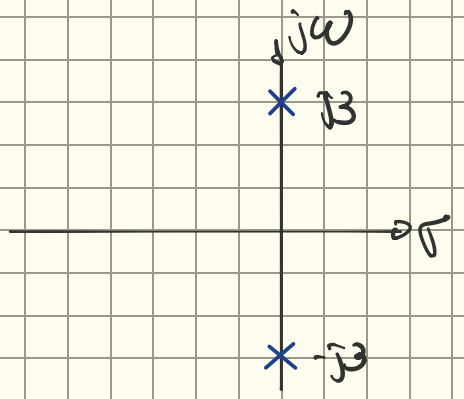
Polos:

$\sigma = (12)\left(\frac{1}{4}\right) = 3 \;/\; \omega_d = \omega_n\sqrt{1-\frac{1}{16}}$

$= 3\sqrt{15}$

$$C(t) = \boxed{\frac{5}{36}} + K_1 e^{-3t}\operatorname{sen}\left(3\sqrt{15}\,t\right) + K_2 e^{-3t}\cos\left(3\sqrt{15}\,t\right)$$

$$*G_5(s) = \frac{s+2}{s^2+9}$$



Polos: $s = \pm j3$

$$c(t) = \frac{2}{9} + K_1 \cos(3t) + K_2 \operatorname{sen}(3t)$$

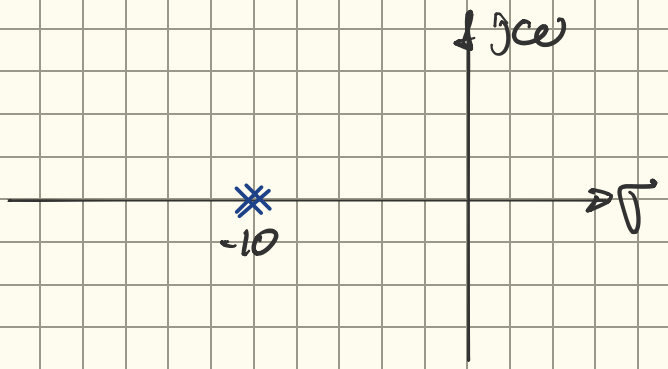
↳ oscila alrededor de $2/9$

$$G_6(s) = \frac{s+5}{s^2+20s+100}$$

$\omega_n = 10 \qquad 2\zeta\omega_n = 20$

$$\zeta = \frac{20}{20}$$

$$\zeta = 1$$



Polos: $s = -10$ (x2)

$$c(t) = \boxed{\frac{1}{20}} + K_1 e^{-10t} + K_2 t e^{-10t}$$