

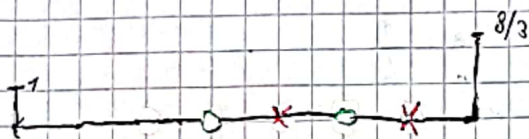
Tarea Semanal #10

①



$$\frac{1}{R_1 C_1} = 6, \quad \frac{1}{R_2 C_2} = 7$$

$$Z(s) = \frac{s^2 + 6s + 8}{s^2 + 4s + 3} = \frac{(s+4)(s+2)}{(s+3)(s+1)}$$

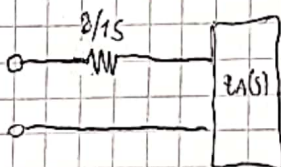


Si quiero que revuene en $\sigma = -6$

Remover Resistencia

$$Z_A(s) = Z(s) - Z_r(s) = \frac{(s+4)(s+2)}{(s+3)(s+1)} - K_1 \rightarrow \frac{s^2 + 6s + 8 - \frac{8}{15}s^2 + \frac{32}{15}s - \frac{24}{15}}{s^2 + 4s + 3}$$

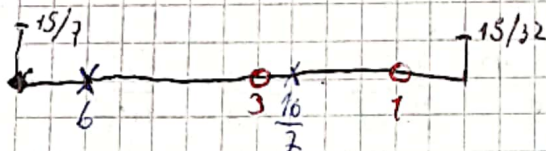
$$\lim_{s \rightarrow -6} Z_A(s) = 0 \Rightarrow \lim_{s \rightarrow -6} \frac{(s+4)(s+2)}{(s+3)(s+1)} - K_1 = 0 \Rightarrow K_1 = \frac{8}{15}$$



$$Z_A(s) = \frac{\frac{2}{15}s^2 + \frac{52}{15}s + \frac{32}{15}}{(s+3)(s+1)} = \frac{1}{15} \cdot \frac{7s^2 + 58s + 96}{(s+3)(s+1)}$$

$$Z_A(s) = \frac{7}{15} \cdot \frac{(s + \frac{16}{7})(s+6)}{(s+3)(s+1)}$$

$$Y_A(s) = \frac{15}{7} \cdot \frac{(s+3)(s+1)}{(s + \frac{16}{7})(s+6)}$$

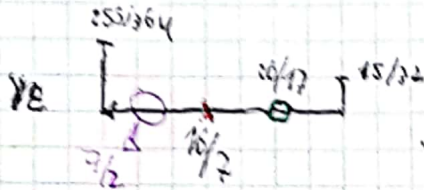
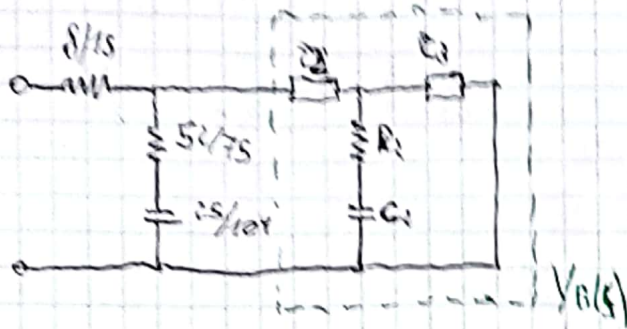


$$Y_B(s) = Y_A(s) - \frac{k_2 s}{s+6} \Rightarrow k_2 = \lim_{s \rightarrow -6} Y_A(s) \cdot \frac{s+6}{s} = \lim_{s \rightarrow -6} \frac{15}{7} \cdot \frac{(s+3)(s+1)}{(s + \frac{16}{7})} = \frac{75}{52}$$

$$Y_B(s) = \frac{15}{7} \cdot \frac{s^2 + 4s + 3}{(s + \frac{16}{7})(s+6)} - \frac{(s \cdot \frac{35}{52})}{s+6} = \frac{\frac{17}{82}s^2 + \frac{10}{16}s + 3}{(s + \frac{16}{7})(s+6)} - \frac{15}{7}$$

$$Y_0(s) = \frac{(s + 26/17)}{(s + 7/2)} \cdot \frac{255}{364}$$

$$\frac{255}{364} = \frac{1}{\frac{364}{255}} = \frac{1}{\frac{52}{15} + \frac{1}{s + 26/17}}$$



$$Z_a = \frac{1}{V_a}$$

$$Z_c = Z_a - k_3 \quad \lim_{s \rightarrow -7/2} Z_c = 0$$

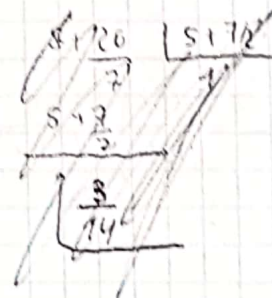
$$k_3 = \lim_{s \rightarrow -7/2} \frac{(s + 7/2)}{(s + 26/17)} \cdot \frac{364}{255} = \frac{384}{1005} = \frac{364}{255} \cdot \frac{289}{464}$$

$$Z_c(s) = \frac{s + 16/7 - \frac{289}{464} (s + 7/2)}{s + 26/17} = \frac{110/464 s + 139/464}{s + 26/17} \cdot \frac{364}{255}$$

$$Z_c(s) = \frac{694}{1139} \cdot \frac{s + 7/2}{s + 26/17} = \frac{624}{1139} \cdot \frac{s + 7/2}{s + 26/17}$$

$$Y_c(s) = \frac{1139}{624} \cdot \frac{s + 26/17}{s + 7/2}$$

$$Y_{\text{residue}}(s) = Y_c(s) - \frac{k_4 s}{s + 7/2}$$



$$k_4 = \lim_{s \rightarrow -7/2} Y_c(s) \cdot \frac{s + 7/2}{s} = \frac{1139}{624} \cdot \frac{s + 26/17}{s} = \frac{4489}{4368} = \frac{1139}{624} \cdot \frac{67}{119}$$

$$Y_{\text{residue}} = \frac{s \cdot \frac{4489}{4368}}{s + 7/2} \Rightarrow Y_{\text{residue}} = \frac{1}{\frac{4368}{4489} + \frac{1}{s \cdot \frac{4489}{4368}}} = \frac{1}{R_2 + C_2}$$

$$Y_3 = \frac{1139}{624} \left[\frac{s + 26/17}{s + 7/2} - \frac{67/119 s}{s + 7/2} \right]$$

$$Y_3 = \frac{1139}{624} \left[\frac{52/119 s + 26/17}{s + 7/2} \right] = \frac{67}{84}$$

$$Z_3 = \frac{84}{67}$$

