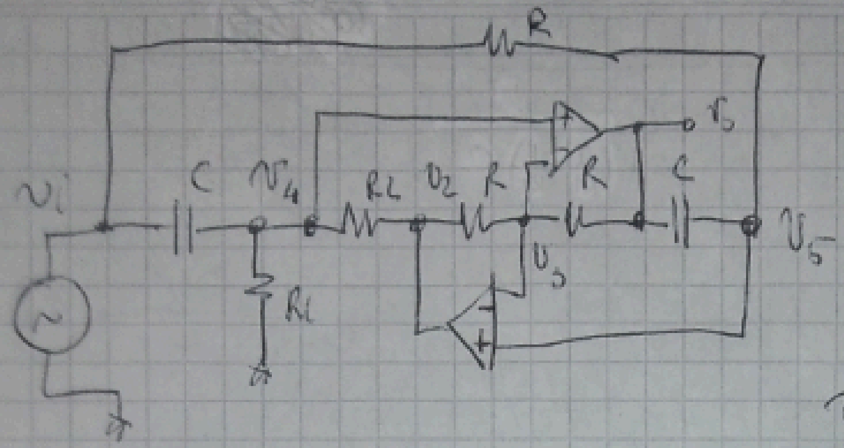
FECHA



$$v_4 = v_3 = v_5$$

$$\begin{cases} v_4 (sC + G_1 + G_2) = v_2 G_2 + v_i sC \\ 2G v_3 = v_0 G + v_2 G \quad \Rightarrow \quad \boxed{v_2 = 2 v_3 - v_0} \\ (sC + G) v_5 = v_i G + v_0 sC \end{cases}$$

$$v_5 = v_i \frac{G}{sC+G} + \frac{v_0 sC}{sC+G}$$

$$v_4 (sC + G_1 + G_2) = 2 v_3 G_2 - v_0 G_2 + v_i sC$$

$$v_5 (sC + G_1 + G_2) = G_2 (2 v_5 - v_0) + v_i sC$$

$$v_i \left(\frac{sCG + G_1 G + G_2 G}{sC + G} \right) + v_0 \left(\frac{s^2C^2 + sCG_1 + sCG_2}{(sC+G)} \right) = v_i \frac{2GG_2}{sC+G} + v_0 \frac{sCG_2}{(sC+G)} - G_2 v_0 + v_i$$

$$\Downarrow$$

$$v_0 \left(\frac{s^2C^2 + sC(G_1 + G_2)}{(sC+G)} + G_2 - \frac{sCG_2}{(sC+G)} \right) = v_i \left[\frac{2GG_2}{(sC+G)} + sC - \frac{sCG + G(G_1 + G_2)}{(sC+G)} \right]$$

$$v_0 \left[\frac{s^2C^2 + sCG_1 + sCG_2 + \cancel{sCG_2} + GG_2 - \cancel{sCG_2}}{(sC+G)} \right] = v_i \left[\frac{2GG_2 + s^2C^2 + \cancel{sCG} - \cancel{sCG} - G(G_1 + G_2)}{(sC+G)} \right]$$

$$\frac{v_0}{v_i} = \frac{s^2C^2 + [2GG_2 - G(G_1 + G_2)]}{s^2C^2 + sCG_1 + sCG_2 + GG_2}$$

NOTA

$$\frac{V_0}{V_i} = \frac{s^2 + \left(\frac{2}{R R_2 C^2} - \frac{1}{R R_1 C} - \frac{1}{R R_2 C}\right)}{s^2 + s\frac{C}{C^2}\left(\frac{1}{R_1} + \frac{1}{R_2}\right) + \frac{1}{R R_2 C^2}}$$

$$\boxed{T(s) = \frac{V_0}{V_i} = \frac{s^2 + \left(\frac{1}{R R_2 C^2} - \frac{1}{R R_1 C^2}\right)}{s^2 + s\left(\frac{1}{R_1 C} + \frac{1}{R_2 C}\right) + \frac{1}{R R_2 C}}}$$

$$\begin{cases} \omega_0^2 = \dfrac{1}{R R_2 C} \\ \omega_N = \dfrac{1}{R C^2}\left(\dfrac{1}{R_2} - \dfrac{1}{R_1}\right) \end{cases}$$

Resolución para $T(s) = \dfrac{s^2 + 1/9}{s^2 + \sqrt{2}s + 1}$

$$\begin{cases} \omega_0^2 = \dfrac{1}{RR_2C} & C = 1 \\ 1/9 = \dfrac{1}{RC^2}\left(\dfrac{1}{R_2} - \dfrac{1}{R_1}\right) & \Rightarrow \\ \sqrt{2} = \dfrac{1}{C}\left(\dfrac{1}{R_1} + \dfrac{1}{R_2}\right) \end{cases}$$

$$1 = \frac{1}{RR_2}$$

$$1/9 = \frac{1}{RR_2} - \frac{1}{RR_1}$$

$$\sqrt{2} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\Downarrow$$

$R_2 = 1,3352$

$R = 0,7486$

$R_1 = 1,502.$

Colocando estos valores se obtiene una respuesta con cierta ganancia. Ajustamos los valores de tal manera de mantener las relaciones

$R = 0.94$

$R_2 = 1,0656$

$R_1 = 1.2$