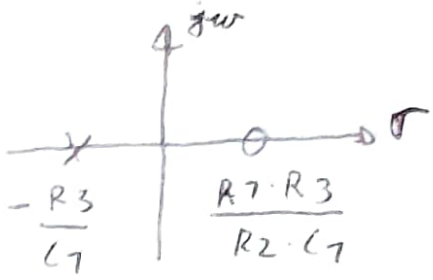
$$H(s) = -\frac{R_2}{R_1} \cdot \frac{s - \frac{R_1 \cdot R_3}{R_2 C_1}}{s + \frac{R_3}{C_1}} \rightarrow$$ Diagrama de polos y ceros



Calculo de modulo y fase

$$H(w) = H(s)\Big|_{s=jw} = \frac{jw - \frac{R_1 \cdot R_3}{R_2 C_1}}{jw + \frac{R_3}{C_1}}$$

$$|H(w)| = \left| \frac{jw - \frac{R_1 \cdot R_3}{R_2 C_1}}{jw + \frac{R_3}{C_1}} \right| = \frac{\sqrt{w^2 + \left(\frac{R_1 R_3}{R_2 C_1}\right)^2}}{\sqrt{w^2 + \left(\frac{R_3}{C_1}\right)^2}} = \sqrt{\frac{w^2 + \frac{R_1 R_3}{R_2 C_1}}{w^2 + \left(\frac{R_3}{C_1}\right)^2}}$$

$$\theta(w) = \measuredangle H(w) = \text{arc tang}\left(\frac{H_I(w)}{H_R(w)}\right) \; ; \; H(w) = |H(w)| \cdot e^{j\theta(w)}$$

$$\rightarrow H(w) = |H(w)| \cdot \frac{e^{j\left(\text{arc tang}\left(\frac{w}{\frac{R_1 R_3}{R_2 C_1}}\right)\right)}}{e^{j\left(\text{arc tang}\left(\frac{w}{\frac{R_3}{C_1}}\right)\right)}}$$

$$\rightarrow H(w) = |H(w)| \cdot e^{j\left(\text{arc tang}\left(\frac{w R_2 C_1}{R_1 R_3}\right) - \text{arctang}\left(\frac{w C_1}{R_3}\right)\right)}$$

$$\therefore \; \theta(w) = \text{arctang}\left(\frac{w R_2 C_1}{R_1 R_3}\right) - \text{arctang}\left(\frac{w C_1}{R_3}\right)$$