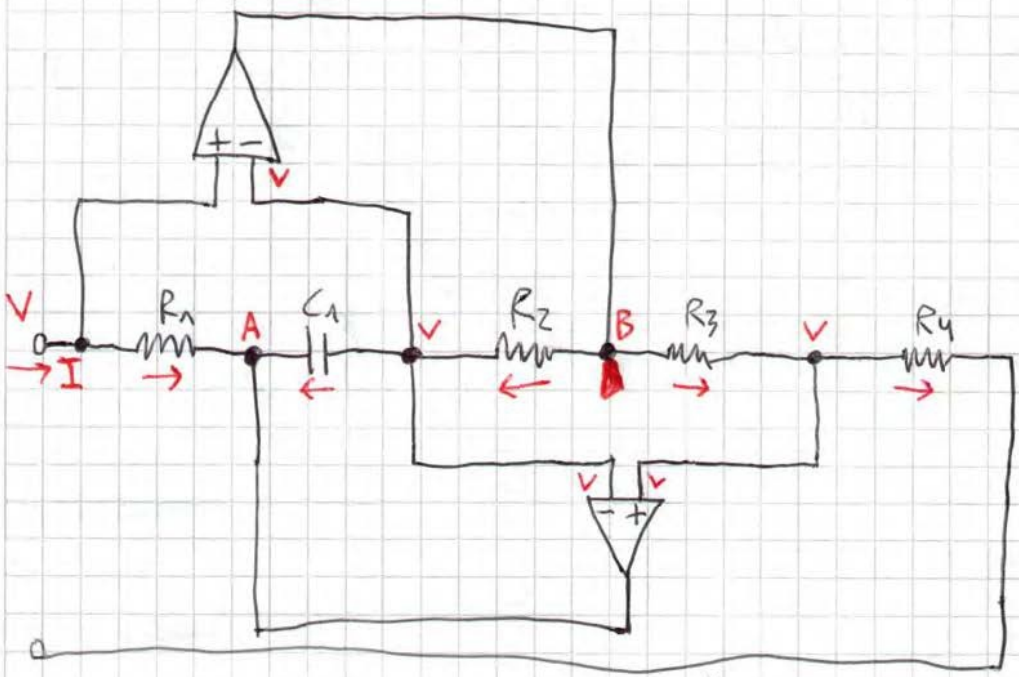


$$I_{C_1} = I_{R_2}$$

$$\frac{V - V_A}{\frac{1}{sC_1}} = \frac{V_B - V}{R_2}$$

$$\left(sC_1 + \frac{1}{R_2}\right) V = sC_1 V_A + \frac{V_B}{R_2}$$

$$\left(sC_1 + \frac{1}{R_2}\right) V = sC_1 V_A + \frac{(R_3 + R_4)}{R_4 R_2} V$$

$$\left(sC_1 + \frac{1}{R_2} - \frac{(R_3 + R_4)}{R_4 R_2}\right) V = sC_1 V_A$$

$$\left(sC_1 + \frac{R_4 - R_3 - R_4}{R_4 R_2 R_3}\right) V = sC_1 V_A$$

$$\left(1 + \frac{1}{sR_4 R_2 C_1}\right) V = V_A$$

$$I_{R_3} = I_{R_4}$$

$$\frac{V_B - V}{R_3} = \frac{V}{R_4}$$

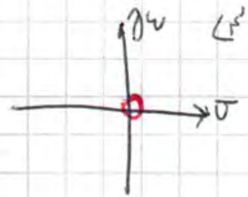
$$V_B = \left(\frac{1}{R_4} + \frac{1}{R_3}\right) \cdot V \cdot R_3$$

$$I_{R1} = \frac{V}{R_1} - \frac{1}{R_1}\cdot\frac{-R_3+R_4R_2C_1 s}{R_4R_2C_1 s}V = \left(\frac{R_4R_2C_1 s + R_3 - R_4R_2C_1 s}{R_1R_4R_2C_1 s}\right)\cdot V$$

$I_{R1} = I$

$$\frac{V}{I} = +\frac{R_1R_2R_4C_1 s}{R_3} = Z_e$$

Se trata de una INDUCTANCIA ACTIVA con $L = \frac{R_1R_2R_4C_1}{R_3}$



Siendo $Z_e = L\cdot s \Rightarrow$ CERO en ORIGEN

Polo en infinito

$$Z_e(s)\Big|_{s=jw} = jLw \longrightarrow |Z_e(jw)| = \sqrt{wL}$$

$$\varphi(Z_e(jw)) = \mathrm{arctg}\left(\frac{wL}{0}\right) = \mathrm{arctg}(\to\infty) = \frac{\pi}{2}$$