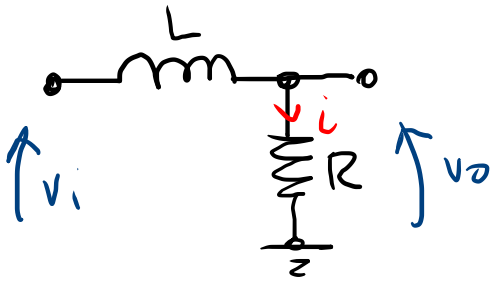
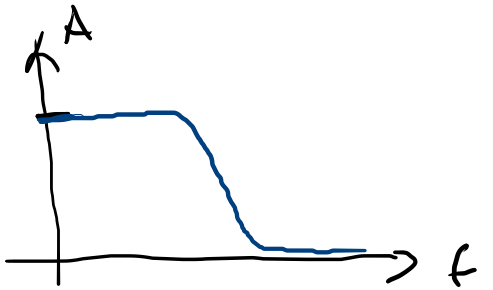
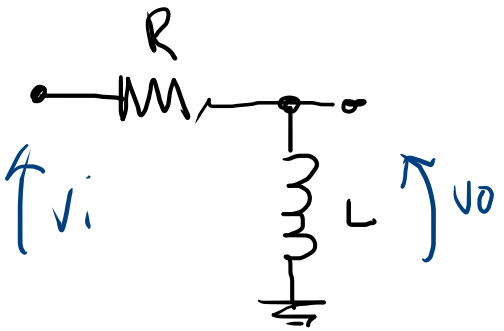
# 170. RL

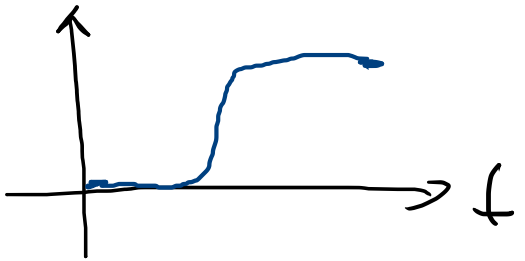


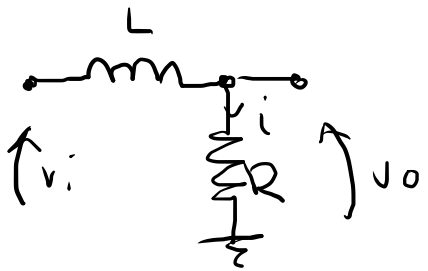

Pasa bajo RL



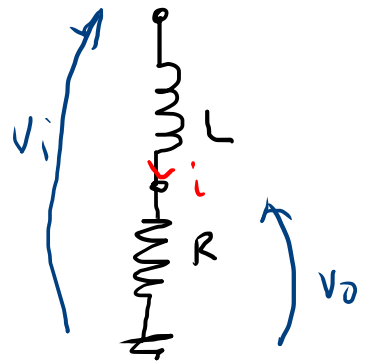




Pasa alto RL






$$i = \frac{V_i}{R + X_L} \qquad X_L = j\omega L$$




$$V_o = R \cdot i = R \cdot \frac{V_i}{R + X_L} = R \cdot \frac{V_i}{R + j\omega L}$$

$$A_V = \frac{V_o}{V_i} = \frac{R}{R + j\omega L} = \frac{1}{\frac{1}{R}(R + j\omega L)} = \frac{1}{1 + j\omega \frac{L}{R}} =$$

$$= \frac{1}{1 + j\frac{\omega}{\omega_L}}$$

$$\omega_L = \frac{R}{L} \qquad \omega_L = 2\pi f_c$$

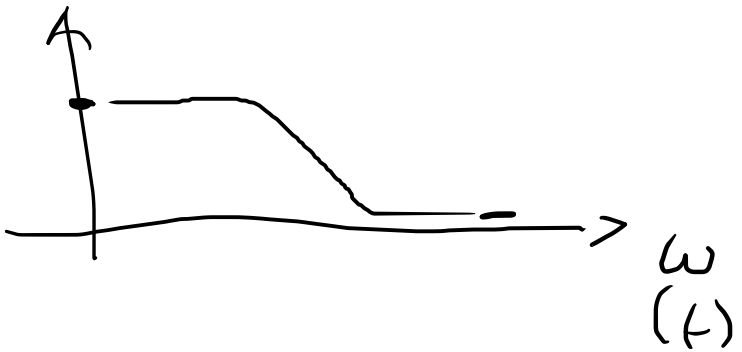
$$f_c = \frac{R}{L} \cdot \frac{1}{2\pi}$$

$L = 1H$

$R = 10K$

$f_L = 1590\,Hz$

$$A_V = \frac{1}{1 + j\frac{\omega}{\omega_L}}$$

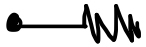



$\omega = 0$

$$A_V = \frac{1}{1 + \frac{0}{\omega_L}} = \frac{1}{1} = 1$$

$\omega = \infty$

$$A_V = \frac{1}{1 + \frac{\infty}{\omega_L}} = \frac{1}{1 + \infty} = \frac{1}{\infty} = 0$$



P. alto