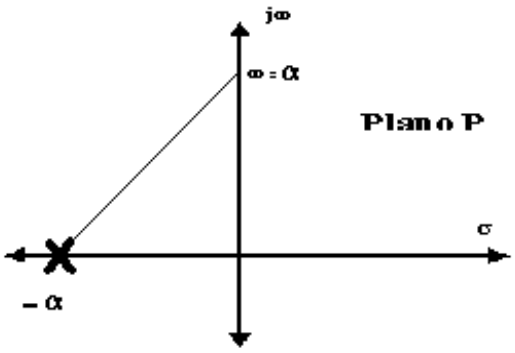
POLO SIMPLE FUERA DEL ORIGEN

$$F_{(P)} = \frac{1}{(P+\alpha)} = \alpha^{-1}\left(\frac{P}{\alpha}+1\right)^{-1}$$

$$F_{(j\omega)} = \left(\frac{j\omega}{\alpha}+1\right)^{-1}$$



MÓDULO

$$|M| = -20\,Log\sqrt{1+\left(\frac{\omega}{\alpha}\right)^2}$$

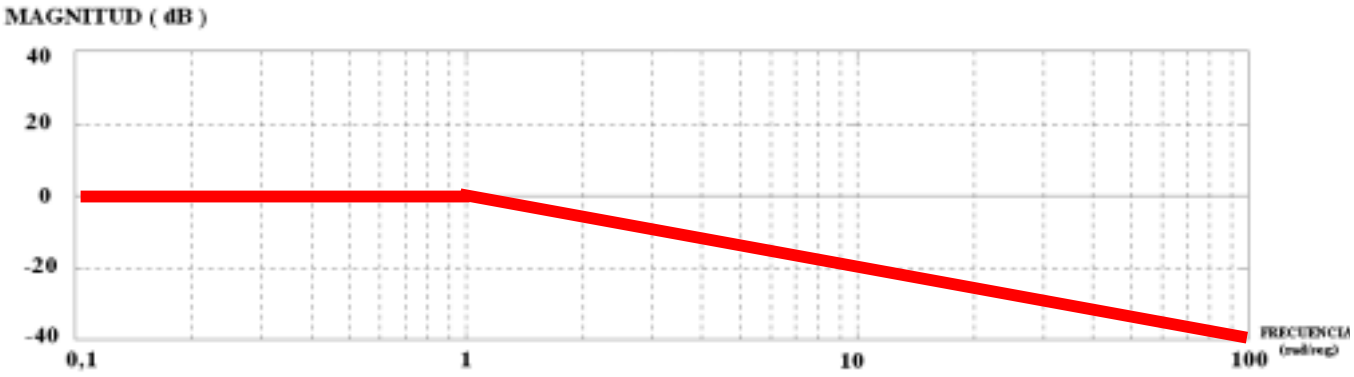
$\frac{\omega}{\alpha} = 100 \Rightarrow |M| = -20\ Log\ \sqrt{1+(100)^2} = -40\ dB$

$\frac{\omega}{\alpha} = 10 \Rightarrow |M| = -20\ Log\ \sqrt{1+(10)^2} = -20\ dB$

$\frac{\omega}{\alpha} = 1 \Rightarrow |M| = -20\ Log\ \sqrt{1+(1)^2} \cong 0\ dB$

$\frac{\omega}{\alpha} = 0.1 \Rightarrow |M| = -20\ Log\ \sqrt{1+(0.1)^2} = 0\ dB$

$\frac{\omega}{\alpha} = 0.01 \Rightarrow |M| = 20\ Log\ \sqrt{1+(0.01)^2} = 0\ dB$



FASE

$$\varphi = -tg^{-1}\frac{Im}{Re} = -tg^{-1}\frac{\frac{\omega}{\alpha}}{1}$$

$\frac{\omega}{\alpha} = 100 \Rightarrow \varphi = -tg^{-1}\frac{\omega}{\alpha} = tg^{-1}\ 100 \cong -90°$

$\frac{\omega}{\alpha} = 10 \Rightarrow \varphi = -tg^{-1}\frac{\omega}{\alpha} = tg^{-1}\ 10 \cong -90°$

$\frac{\omega}{\alpha} = 1 \Rightarrow \varphi = -tg^{-1}\frac{\omega}{\alpha} = tg^{-1}\ 1 \cong 0°°$

$\frac{\omega}{\alpha} = 0.1 \Rightarrow \varphi = -tg^{-1}\frac{\omega}{\alpha} = tg^{-1}\ 0.1 \cong 0°$

$\frac{\omega}{\alpha} = 0.01 \Rightarrow \varphi = -tg^{-1}\frac{\omega}{\alpha} = tg^{-1}\ 0.01 \cong 0°$