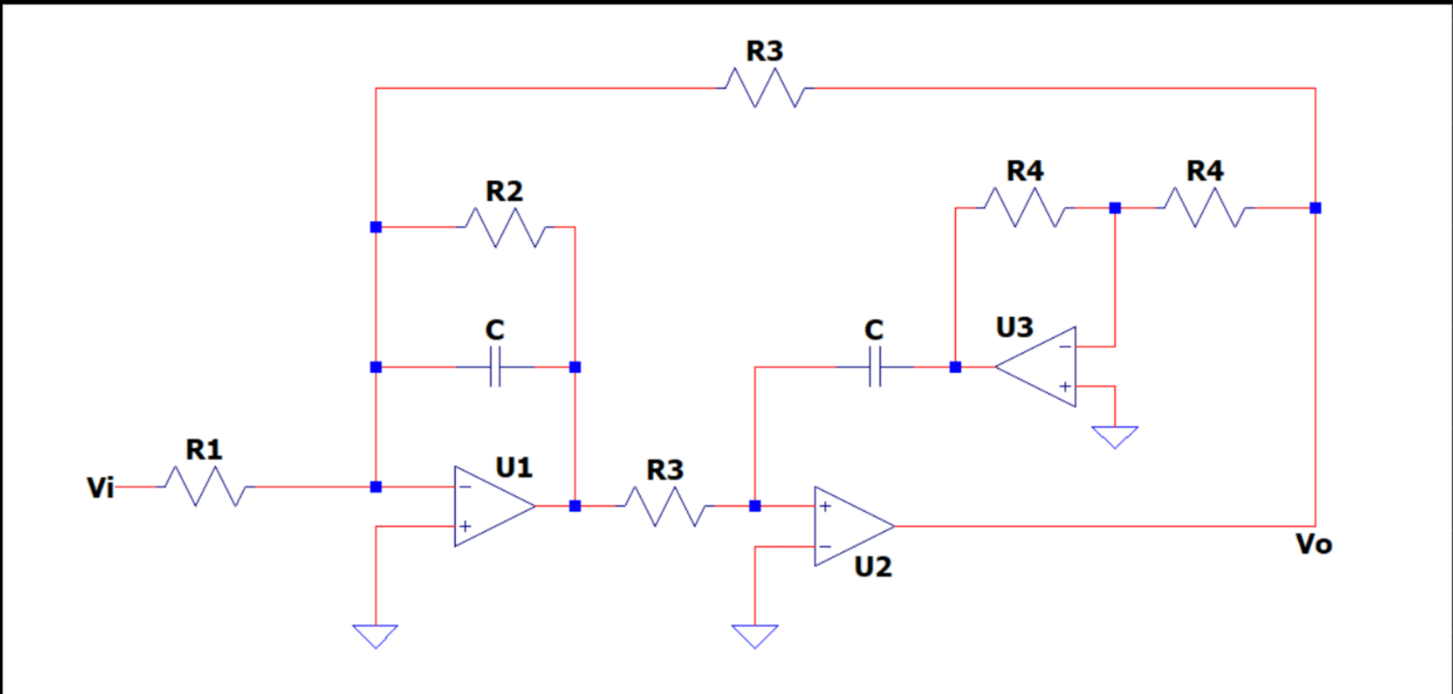


Partes de Función con $\alpha_{max} = 1dB$

$$T(s)\,T(-s) = \frac{b^2}{(s^2 + sa + b)\,(s^2 - sa + b)}$$

$$T(s)\,T(-s) = \frac{1}{1 + \xi^2 s^{2n} (-j)^{2n}}$$

Si $n = 2 \rightarrow \dfrac{1}{1 + \xi^2 s^4}$

$$\frac{1}{\xi s^4} = \frac{b^2}{(s^2+sa+b)(s^2-sa+b)}$$

$$\frac{\frac{1}{\xi^2}}{\frac{1}{\xi}+s^4} = \frac{b^2}{(s^2+sa+b)(s^2-sa+b)}$$

$\therefore \quad b^2 = \frac{1}{\xi^2} \quad n \quad a = \sqrt{2b}$

Si $\alpha_{max} = 1 \rightarrow \xi^2 = 10^{\frac{\alpha_{max}}{10}} - 1$

$\therefore \xi^2 = 0.259$

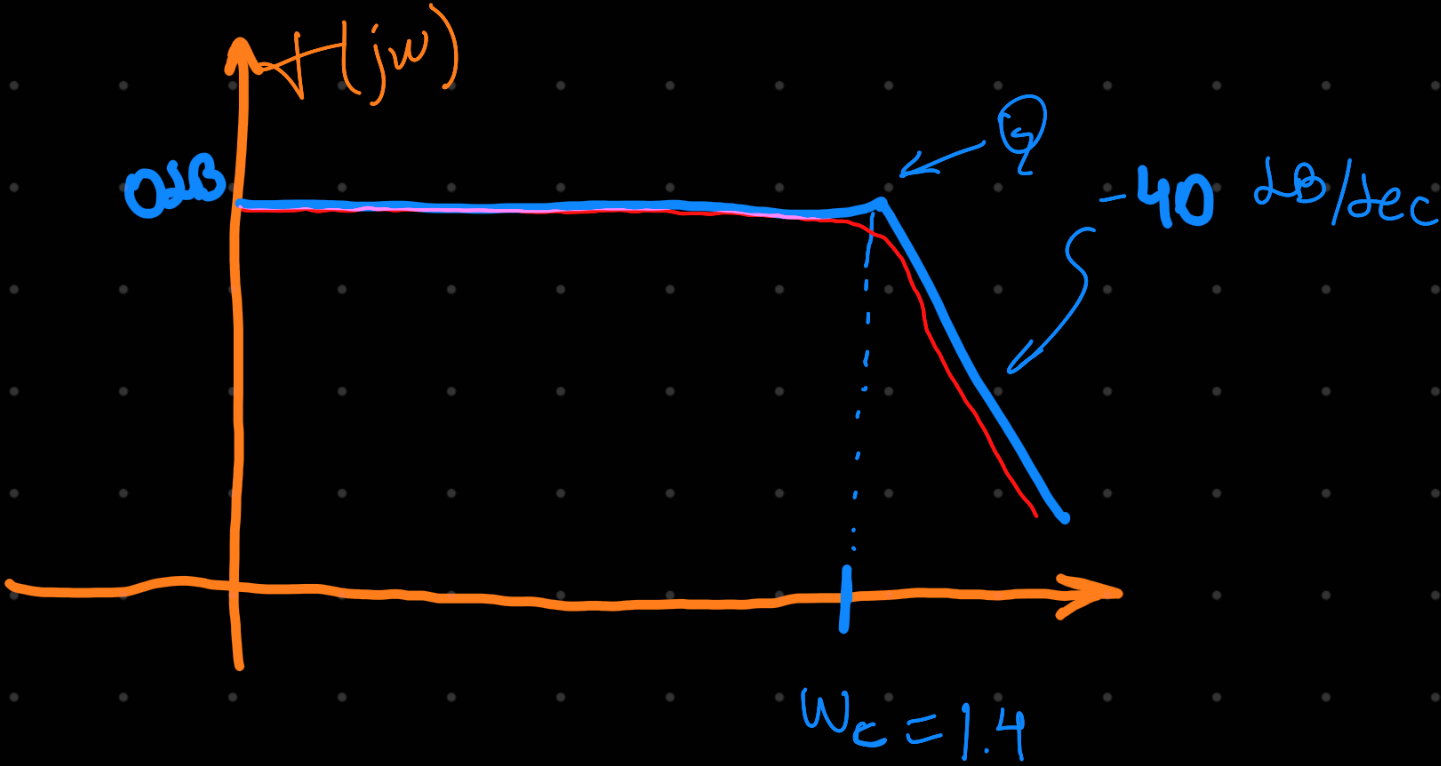
$\xi = 0.509$

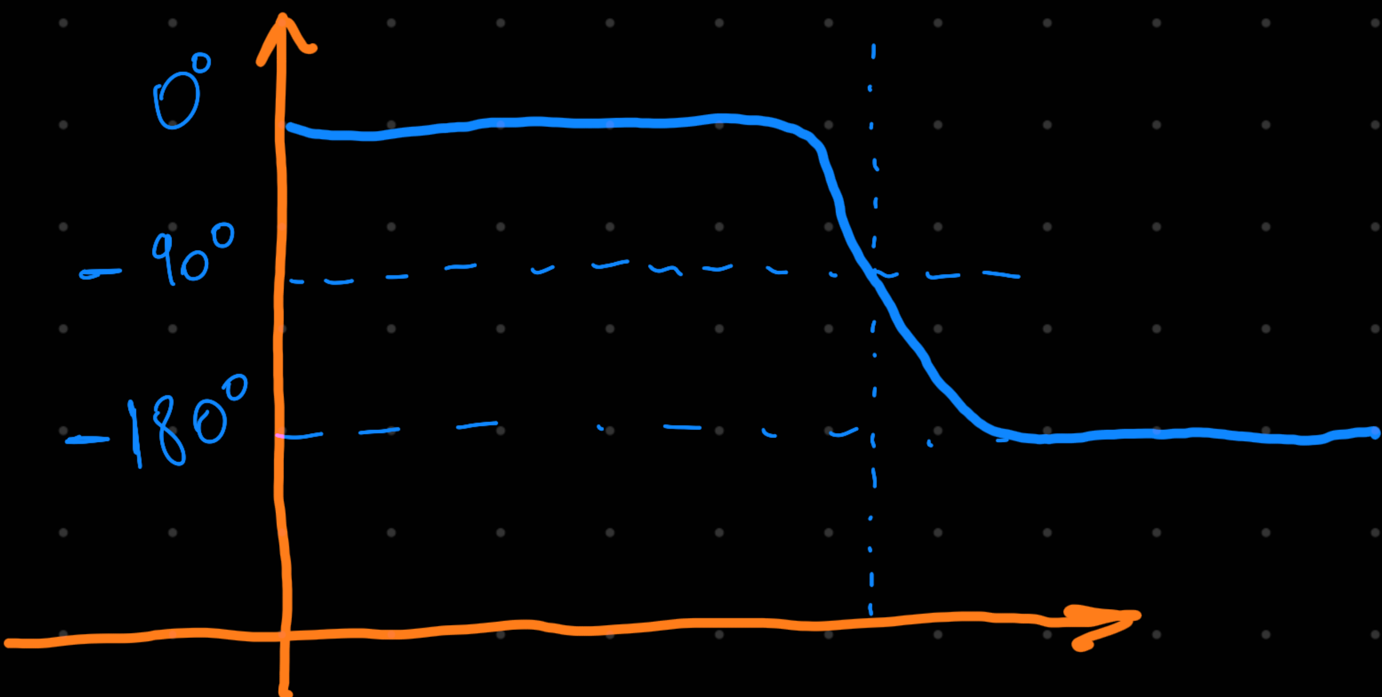
$b = \frac{1}{\xi} = 1.965$ $\quad a = 1.982$

$= \sqrt{2 \cdot b}$

La transferencia es:

$$H(s) = \frac{1.4^2}{s^2 + s\sqrt{2}\,1.4 + 1.4^2}$$





$$|T(j\omega)| = \frac{1.4^2}{-\omega^2 + j\omega\sqrt{2}\,1.4 + 1.4^2}$$

$$|T(j\omega)| = \frac{1.4^2}{\sqrt{(1.4^2-\omega^2)^2 + (\omega\sqrt{2}\,1.4)^2}}$$

Si $\omega = 0$

$$\frac{1.4^2}{\sqrt{(1.4)^2}} = 1$$

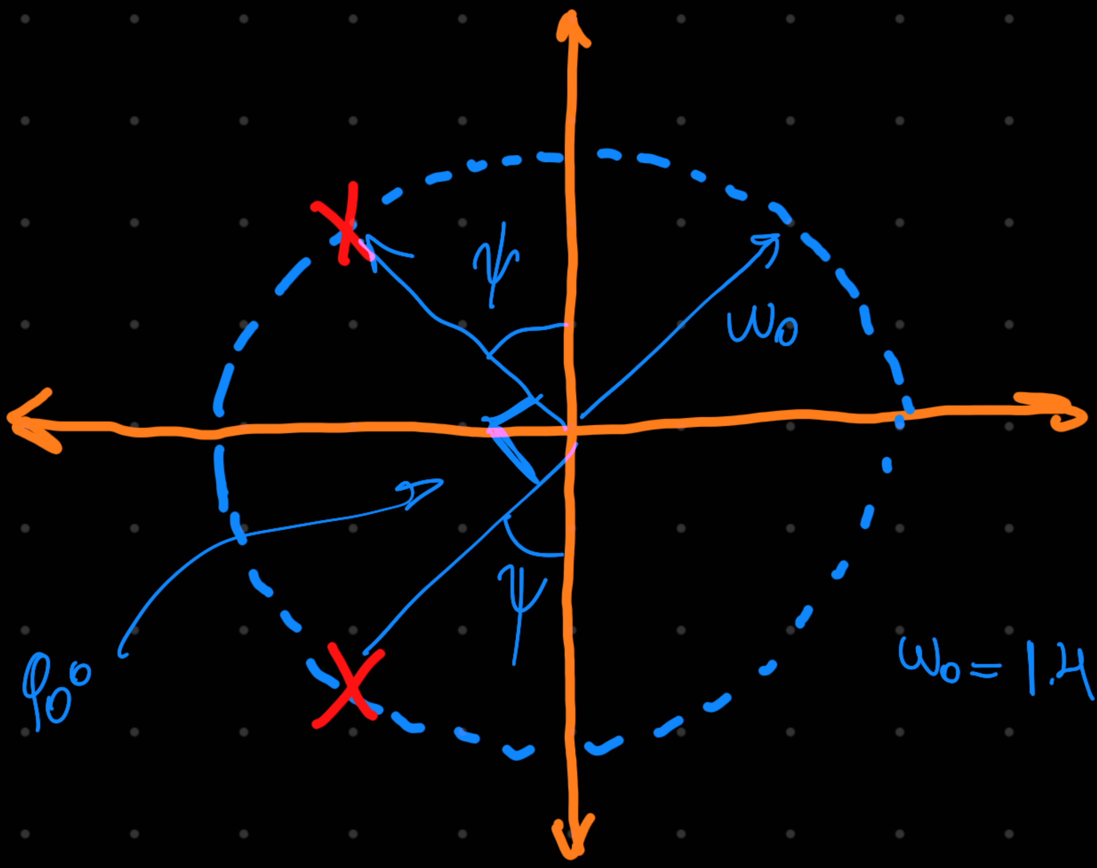
Si $\omega \to \infty$

$$|T(j\omega)| \to 0$$

Si $\omega = \omega_0$, es decir 1.4

$$\frac{1.4^2}{\sqrt{(\sqrt{2}\,1.4^2)^2}} = \frac{1}{\sqrt{2}} = Q$$

$$\measuredangle v = 0 - \operatorname{Arctg}\left(\frac{\omega \frac{\omega_0}{Q}}{\omega_0^2 - \omega^2}\right)$$



$$Q = \frac{1}{2\cos\psi} = \frac{1}{\sqrt{2}} \rightarrow \cos^{-1}\left(\frac{\sqrt{2}}{2}\right) = \psi$$

$$\psi = 45°$$

Defino la Plantilla

$w_c = 1$ $\alpha_{max} = 1\ dB$

$\alpha_{min} = ?$ $w_s = ?$ Uso $w_s = 3$

$$\alpha_{min} = 10 \log \underbrace{\left(1 + \xi^2 w_s^{2n}\right)}_{22.06} \quad ; \; n = 2, \; \xi^2 \approx 0.26$$

$$\alpha_{min} \approx 13.43\ dB$$