

Gráfica RLC

Frecuencia angular

$$\omega = 2\pi f = 2\pi \cdot 200 \text{ Hz} = 1256,64 \text{ Hz}$$

Reactancia inductiva

$$X_L = \omega L = 1256,64 \text{ Hz} \cdot 0,5 \text{ H} = 628,32 \Omega$$

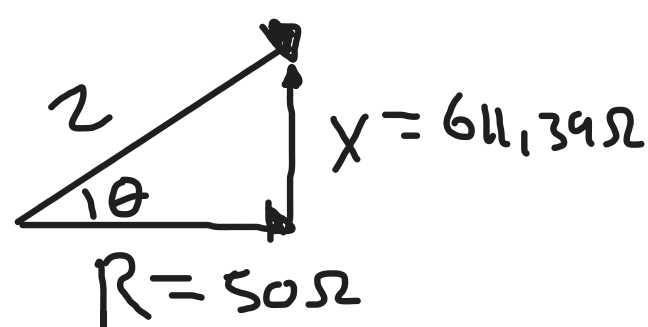
Reactancia capacitiva

$$X_C = \frac{1}{\omega \cdot C} = \frac{1}{1256,64 \text{ Hz} \cdot 47 \cdot 10^{-6} \text{ F}} = 16,93 \Omega$$

Reactancia

$$X = X_L - X_C = 628,32 \Omega - 16,93 \Omega = 611,39 \Omega$$

$Z(t) = R + j(X) \rightarrow$ Impedencia total



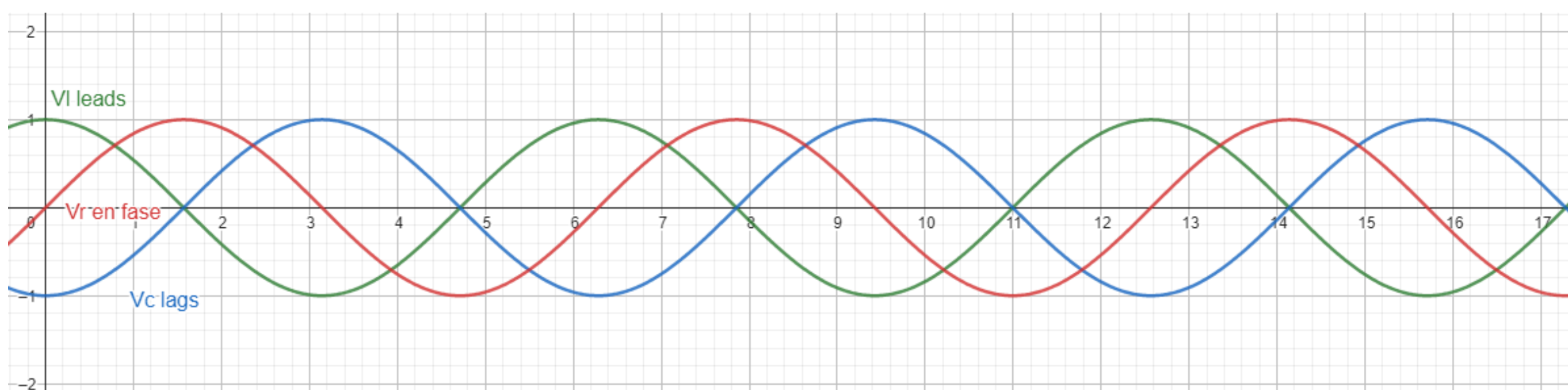
$$Z = \sqrt{(611,39 \Omega)^2 + (50 \Omega)^2}$$

$$Z = 613,43 \Omega$$

$$\theta = \tan^{-1}\left(\frac{X}{R}\right) = \tan^{-1}\left(\frac{611,39 \Omega}{50 \Omega}\right) = 85,32^\circ$$

$$Z(t) = 613,43 \angle 85,32^\circ \Omega$$

Gráficas.



Corriente total

$$I(t) = \frac{24 \angle 0^\circ \text{ V}}{613,43 \angle 85,32^\circ \Omega}$$

$$I(t) = 0,039 \angle (0^\circ - 85,32^\circ) \text{ A}$$

$$I(t) = 0,039 \angle -85,32^\circ \text{ A}$$