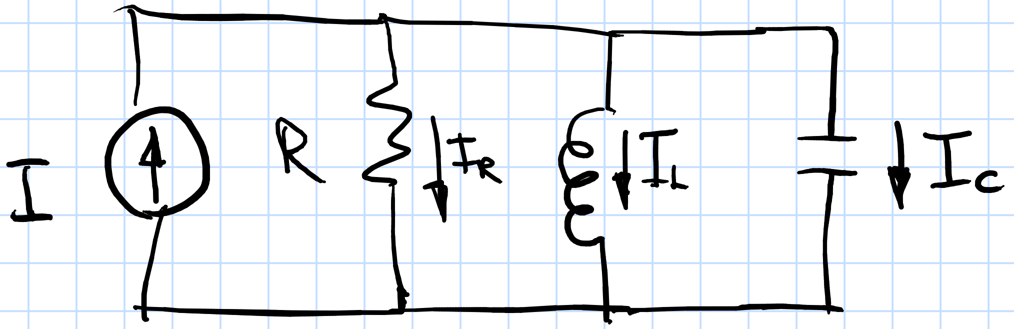
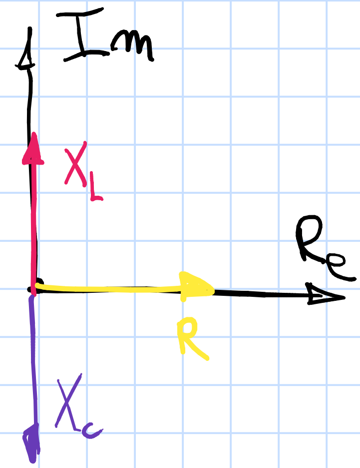
Ej. RTA en Frecuencia





1) $$\frac{1}{\omega C} = \omega L$$

$$|X_C| = |X_L|$$

Se sugiere, por ser un circuito paralelo, plantear BC = BL, dado que la expresión de la red pasiva más conveniente en este caso es en forma de ADMITANCIA

$$\frac{1}{LC} = \omega^2$$

$$\omega_0 = \sqrt{\frac{1}{LC}}$$

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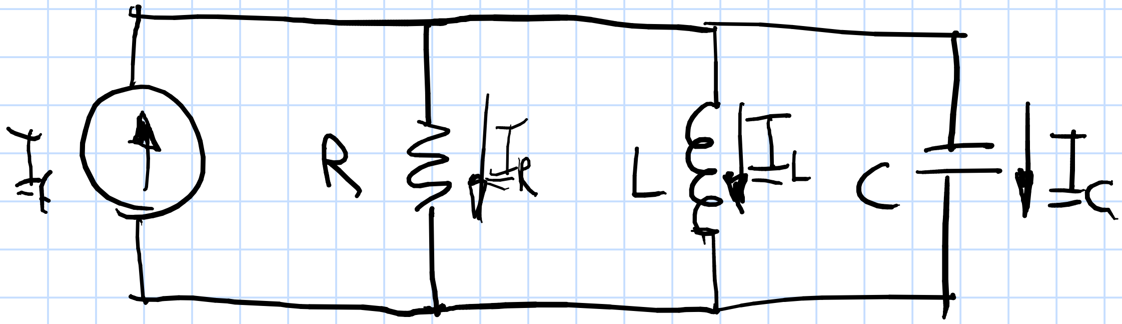
2) $\underline{I} = 1\angle 30^\circ \, mA \equiv i(t) = 1mA \, Sen(\omega t + 30^\circ)$

3) ¿Tenemos Sobrecorriente?

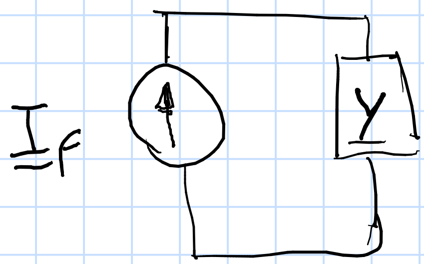
*Lo hacemos para el capacitor. El inductor lo resuelve el que lee.



Para algun ω, $\underline{I}_L > \underline{I}_f$?

$$\boxed{|\underline{I}_c| = \frac{|\underline{U}_c|}{|jX_c|}} \qquad |\underline{U}_c| = |\underline{U}_f| \qquad |\underline{U}_f| = \frac{|\underline{I}_f|}{|\underline{Y}|}$$

$$\begin{cases} \underline{Y}_L = \dfrac{1}{j\omega L} = -j\dfrac{1}{\omega L} \\ \underline{Y}_C = \dfrac{1}{-j/\omega C} = j\omega C \\ \underline{Y}_R = \dfrac{1}{R} = G \end{cases}$$

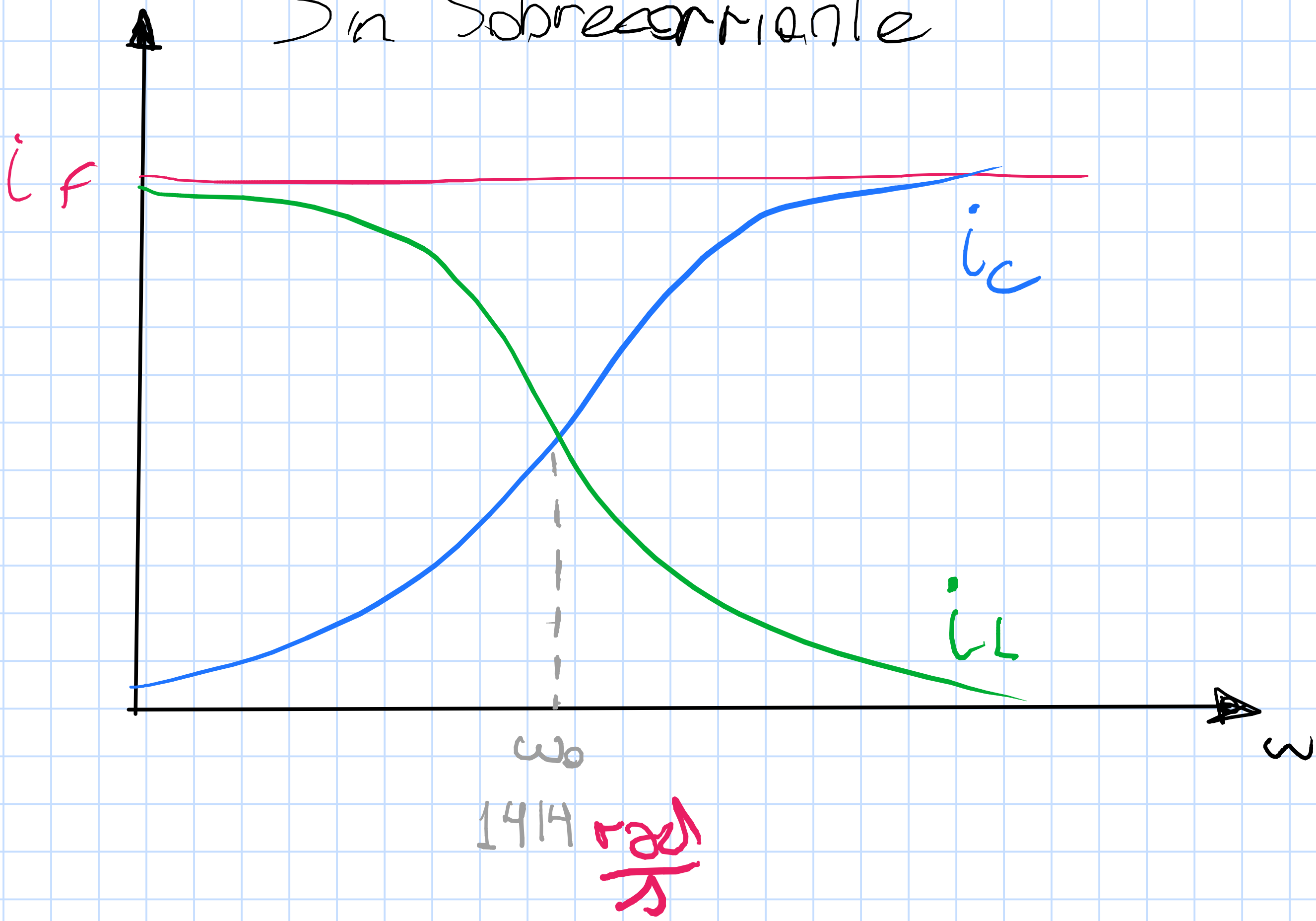


$$\underline{Y}_{TOT} = \underline{Y}_R + \underline{Y}_L + \underline{Y}_C = G - j\cdot\frac{1}{\omega L} + j\omega C \Rightarrow |\underline{Y}| = \sqrt{G^2 + \left(\omega C - \frac{1}{\omega L}\right)^2}$$

$$|\underline{I}_c| = \frac{|\underline{I}_f|}{\sqrt{G^2 + \left(\omega C - \frac{1}{\omega L}\right)^2}} \cdot \omega C \qquad\qquad |\underline{I}_L| = \frac{|\underline{I}_f|}{\sqrt{G^2 + \left(\omega C - \frac{1}{\omega L}\right)^2}} \cdot \frac{1}{\omega L}$$

$$\boxed{\frac{|\underline{I}_c|}{|\underline{I}_f|} = \frac{\omega C}{\sqrt{G^2 + \left(\omega C - \frac{1}{\omega L}\right)^2}}} \qquad\qquad \boxed{\frac{|\underline{I}_L|}{|\underline{I}_f|} = \frac{1}{\sqrt{G^2 + \left(\omega C - \frac{1}{\omega L}\right)^2} \cdot \omega L}}$$

Sin Sobrecorriente



Con Sobrecorriente