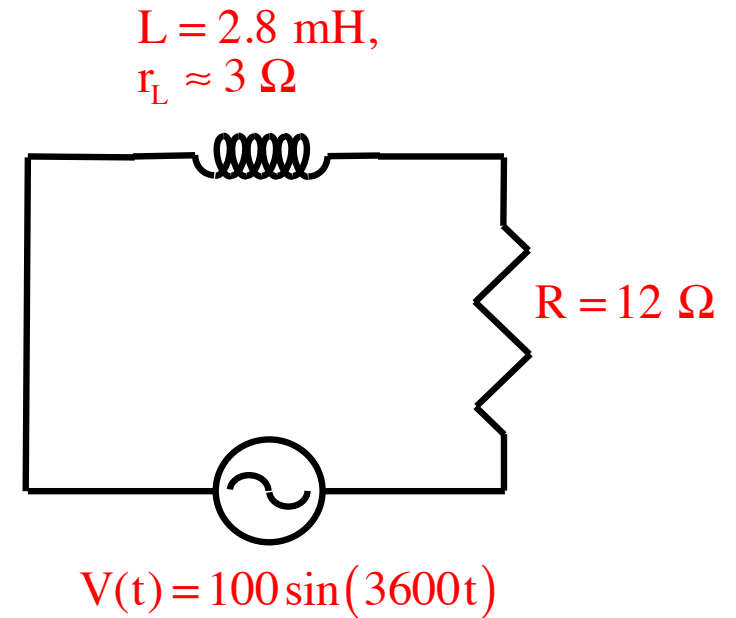


2.) RL circuit:

Consider the RL circuit shown to the right.

a.) What is the circuit's inductive reactance?



b.) What is the circuit's impedance?

c.) What is the circuit's current?

2.) RL circuit:

Consider the RL circuit shown to the right (assuming the resistor-like resistance of the coil is zero).

a.) What is the circuit's inductive reactance?

$$\begin{aligned}X_L &= 2\pi\nu L \\ &= 2\pi(573 \text{ Hz})(2.8 \times 10^{-3} \text{ H}) \\ &= 1.76 \times 10^{-2} \Omega\end{aligned}$$

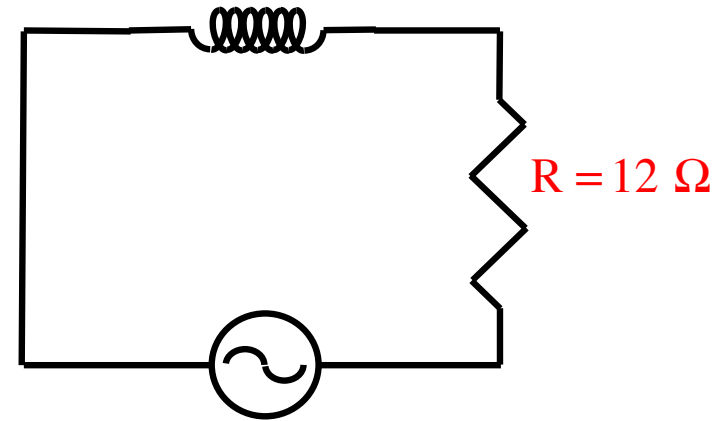
b.) What is the circuit's impedance?

$$\begin{aligned}Z &= \left[(R + r_L)^2 + (X_L - X_C)^2 \right]^{1/2} \\ &= \left[(12 \Omega + 3 \Omega)^2 + (1.76 \times 10^{-2})^2 \right]^{1/2} \\ &= 15 \Omega\end{aligned}$$

c.) What is the circuit's current?

$$\begin{aligned}i_{\text{RMS}} &= \frac{V_{\text{RMS}}}{Z} \\ &= \frac{(70.7 \text{ V})}{(15 \Omega)} \\ &= 4.71 \text{ A}\end{aligned}$$

$$\begin{aligned}L &= 2.8 \text{ mH}, \\ r_L &\approx 3 \Omega\end{aligned}$$



$$V(t) = 100 \sin(3600t)$$