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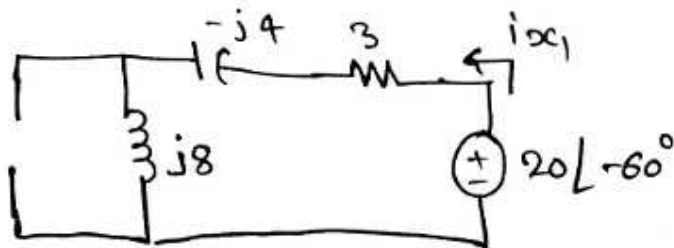
Answer

$$\omega = 2$$

$$X_L = \omega L = (2)(4) = 8 \Omega$$

$$X_C = \frac{1}{\omega C} = \frac{1}{(2)(1/8)} = 4 \Omega$$

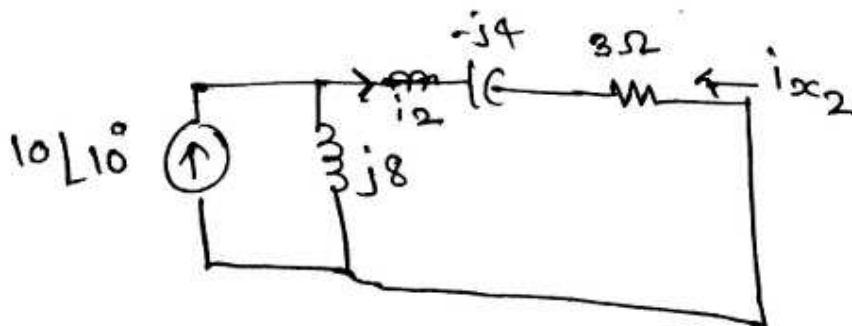
Apply superposition theorem



$$i_{x1} = \frac{20\angle -60^\circ}{3 - j4 + j8} = \frac{20\angle -60^\circ}{3 + j4} = \frac{20\angle -60^\circ}{5\angle 53.13^\circ}$$

$$i_{x1} = 4\angle -113.13^\circ \text{ A}$$

Apply superposition theorem



Apply Current division rule

$$i_2 = 10 \angle 10^\circ \times \frac{j8}{3 - j4 + j8}$$

$$= \frac{80 \angle 100^\circ}{3 + j4} = \frac{80 \angle 100^\circ}{5 \angle 53.13^\circ}$$

$$i_2 = 16 \angle 46.87^\circ$$

from circuit i_{x2} is in opposite direction of i_2

$$i_{x2} = -16 \angle 46.87^\circ$$

$$i_x = i_{x1} + i_{x2}$$

$$= 4 \angle -113.13^\circ - 16 \angle 46.87^\circ$$

$$i_x = 19.80 \angle -129.169^\circ \text{ A}$$

Likes: 2

Dislikes: 0