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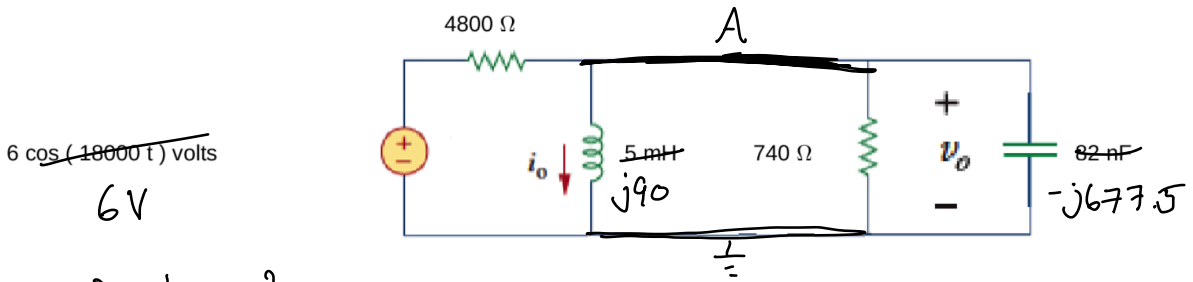
→ I have neither given nor recieved unauthorized help

I. Label Nodes



II. Find Impedances

$$Z_L = j(18000)(5\times10^{-3}) = j90$$

$$Z_C = \frac{1}{j(18000)(82\times10^{-9})} = -j677.5$$

III. Node Equation & Solve for A

A:

$$\frac{A-6}{4800} + \frac{A}{j90} + \frac{A}{740} + \frac{A}{-j677.5} = 0$$

$$\frac{A}{4800} - \frac{6}{4800} + \frac{A}{j90} + \frac{A}{740} + \frac{A}{-j677.5} = 0$$

$$A\left[\frac{1}{4800} + \frac{1}{j90} + \frac{1}{740} + \frac{1}{-j677.5}\right] = \frac{6}{4800}$$

$$A\left[0.00156 - j0.00964\right] = 0.00125$$

$$A = \frac{0.00125}{0.00156 - j0.00964}$$

$\rightarrow A = 0.0204 + j0.126$ ✱

IV. Solve For i_o

$$i_o = \frac{A}{j90} = \frac{0.0204 + j0.126}{j90} = 0.0014 - j0.000227$$

Convert to Magnitude - Angle

$$||i_o|| = \sqrt{(0.0014)^2 + (-0.000227)^2} = 0.00142$$

$$\text{phase} = \arctan\left(\frac{-0.000227}{0.0014}\right) = -9.21^\circ$$

$$\boxed{i_o = 1.42 \cos(18000t - 9.21) \text{ mA}}$$

V. Solve For V_o

Recall:

$$A = 0.0204 + j0.126$$

$$||A|| = \sqrt{(0.0204)^2 + (0.126)^2} = 0.128$$

$$\text{Phase} = \arctan\left(\frac{0.126}{0.0204}\right) = 80.8^\circ$$

$$A = 0.128 \angle 80.8^\circ$$

Voltage is equal in Parallel Impedances:

$$V_o = 128 \cos(18000t + 80.8)\ mV$$