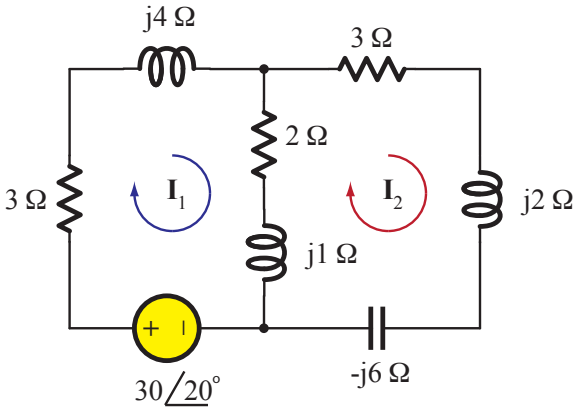
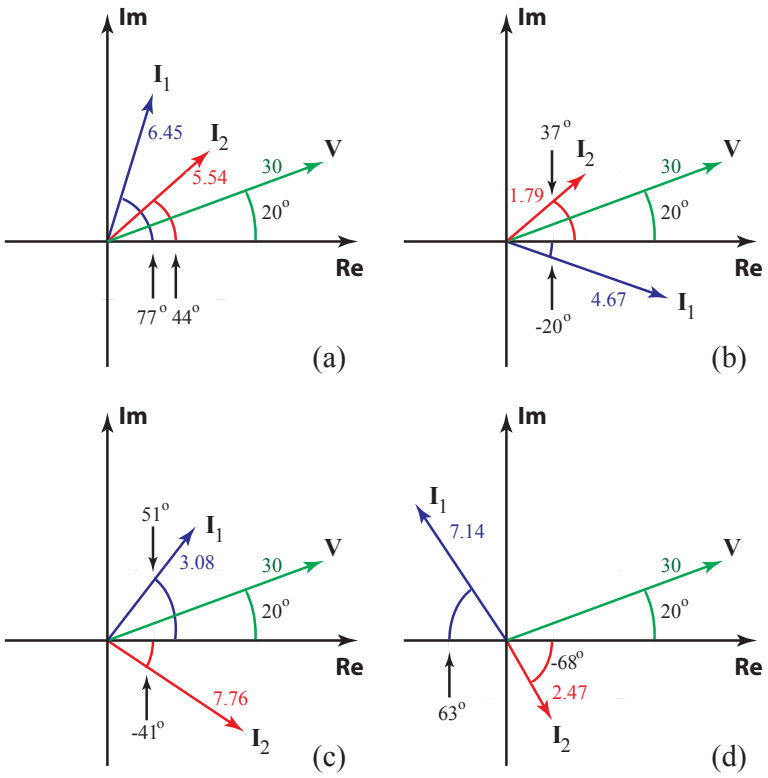
University of Calgary
Department of Electrical and Computer Engineering

ENGG 225 - Fundamentals of Electrical Circuits and Machines
Winter, 2018

Problem Assignment #8

1. **[2 marks.]** Use the mesh-current method to determine $\mathbf{I}_1$ and $\mathbf{I}_2$ in the following circuit, then choose the phasor diagram that correctly displays their values.

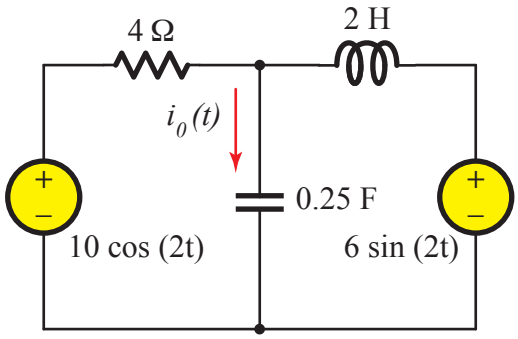




(e) None of the above.

2. **[2 marks.]** Use the mesh-current method to find the current $i_0(t)$ in the circuit shown at right. Give just the peak current in *Amperes*.

3. **[1 mark.]** For Question #2 above, give the phase angle θ of $i_0(t)$ in degrees such that $-180° \leq \theta < 180°$.



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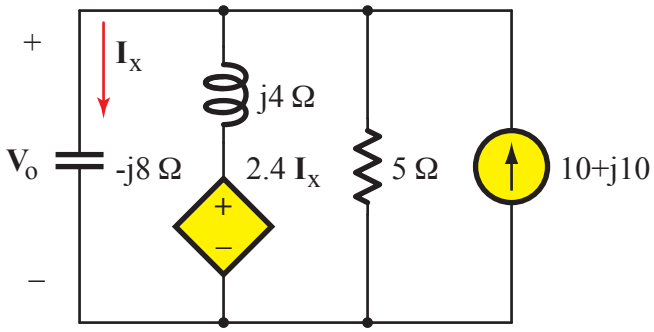
4. **[2 marks.]** Use the node-voltage method to find the phasor voltage $\mathbf{V_O}$ in the circuit at right. Give just the peak voltage of $\mathbf{V_O}$ in *Volts*.

5. **[1 mark.]** For Question #4 above, give the phase angle θ of $\mathbf{V_O}$ in degrees such that $-180° \leq \theta < 180°$.



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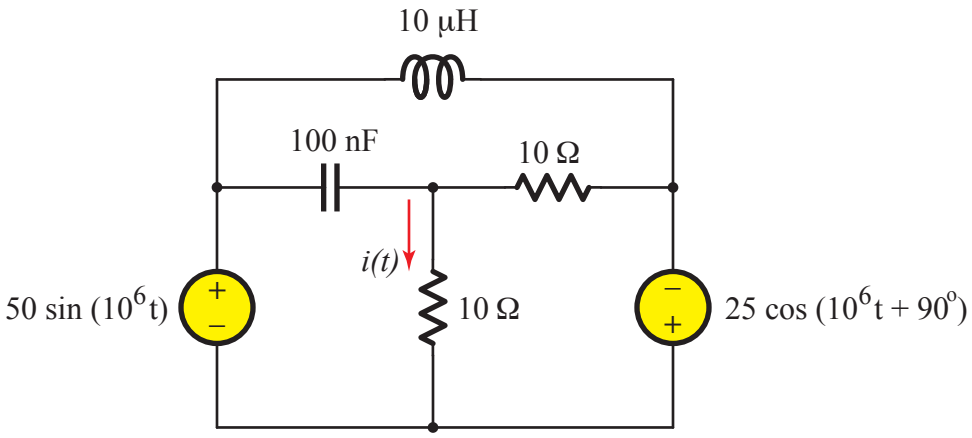
6. **[2 marks.]** Use the node-voltage method to find the current $i(t)$ in the following circuit. Give just the peak ampliitude of $i(t)$ *in Amperes*.



7. **[2 marks.]** Determine the Thévenin equivalent circuit at terminals **a** and **b**. Give just the peak voltage $V_t = V_{ab}$ in *Volts*.

8. **[1 mark.]** For Question #7 above, give the magnitude of the Thévenin impedance Z_t in *Ohms*.