

Part 1: Analysis with single source**Q1 Alexander P9.46**

If $i_s = 5 \cos(10t + 40^\circ)$ A in the circuit of Fig. 9.53, find i_o

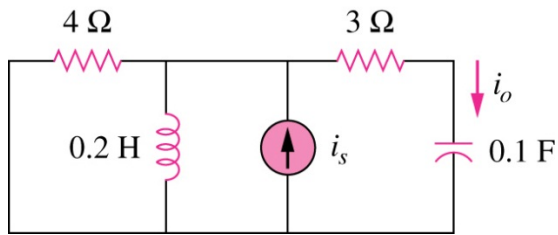


Fig 9.53

Q2 Alexander P9.48

For the circuit shown in Fig 9.55, given that $v_s(t) = 20 \sin(100t - 40^\circ)$ V, find i_x

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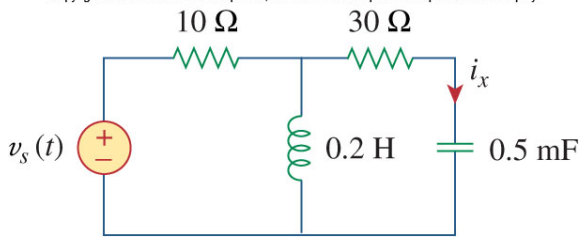


Fig 9.55

Part 2: Analysis with multiple sources of same frequency**Q3 Alexander P10.7**

Find V in the circuit of Fig 10.56

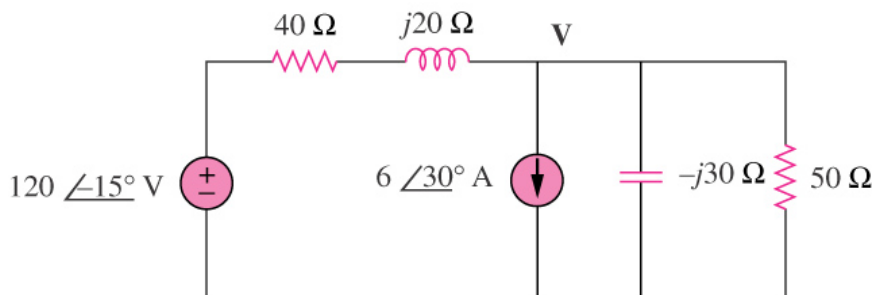


Fig 10.56

Q4 Alexander P10.25

Find i_o in Fig 10.74

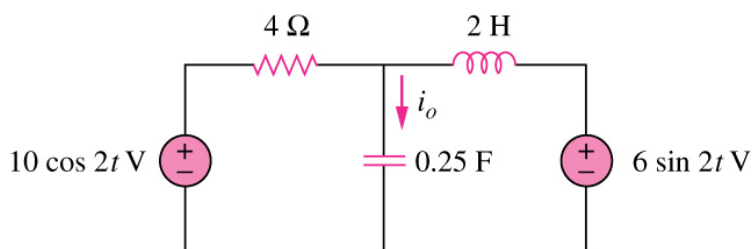


Fig 10.74

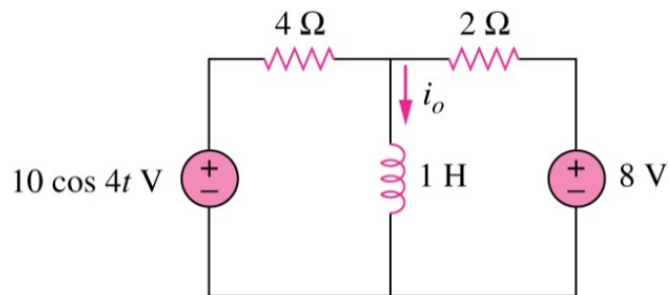
Part 3: Superposition (different source frequencies)**Q5 Alexander P10.40**Find i_o in the circuit of Fig 10.84.

Fig 10.84

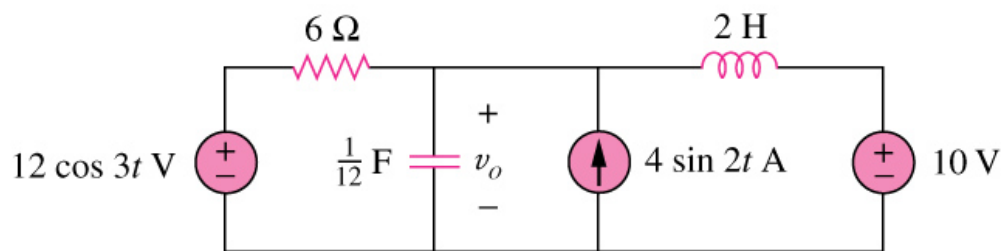
Q6 Alexander P10.46Find v_o in the circuit of Fig 10.89.

Fig 10.89

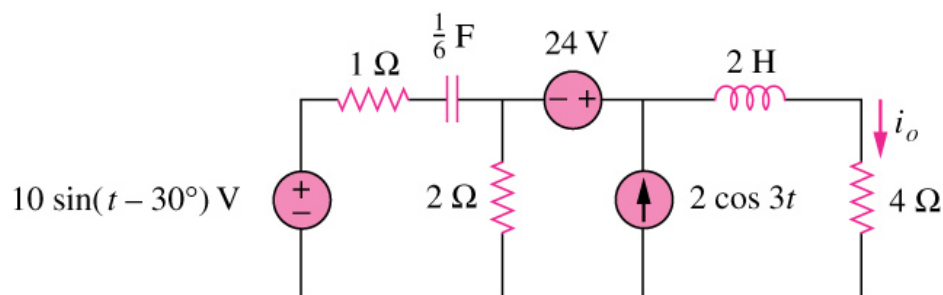
Q7 Alexander P10.47Find i_o in the circuit of Fig 10.99.

Fig 10.90

Numerical answers**Analysis with single source****Q1 Alexander P9.46**

$$i_o = 2.325 \cos(10t + 94.46^\circ) \text{ A}$$

Q2 Alexander P9.48

$$i_x = 0.4338 \cos(100t - 80.6^\circ) \text{ A}$$

Analysis with multiple sources of same frequency**Q3 Alexander P10.7**

$$V = 124.08 \angle -154^\circ \text{ V}$$

Q4 Alexander P10.25

$$\text{Current: } i_o = 1.4142 \cos(2t + 45^\circ) \text{ A}$$

Superposition (Different frequency sources)**Q5 Alexander P10.40**

$$\text{Current: } i_o = 4 + 0.79 \cos(4t - 71.56^\circ) \text{ A}$$

Q6 Alexander P10.46

$$\text{Voltage: } v_o = 10 + 21.45 \sin(2t + 26.56^\circ) + 10.73 \cos(3t - 26.56^\circ) \text{ V}$$

Q7 Alexander P10.47

$$\text{Current: } i_o = 4 + 0.504 \sin(t + 19.1^\circ) + 0.3352 \cos(3t - 76.43^\circ) \text{ A}$$