Part 1: Analysis with single source

Q1 Alexander P9.46

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

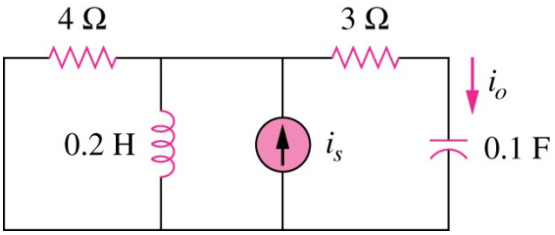

Fig 9.53

Q2 Alexander P9.48

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

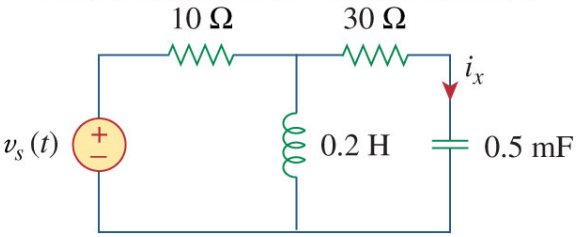

Fig 9.55

Part 2: Analysis with multiple sources of same frequency

Q3 Alexander P10.7

Find V in the circuit of Fig 10.56

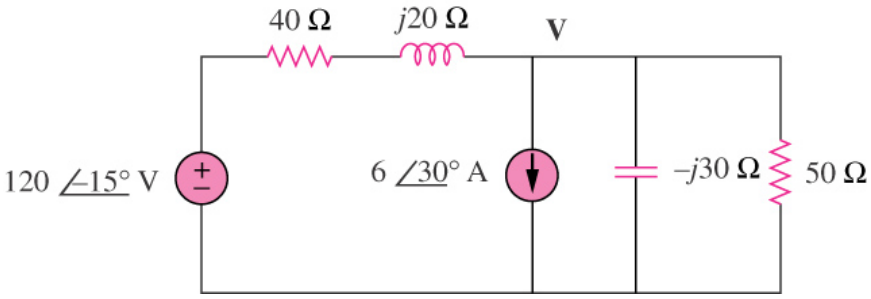

Fig 10.56

Q4 Alexander P10.25

Find i_o in Fig 10.74

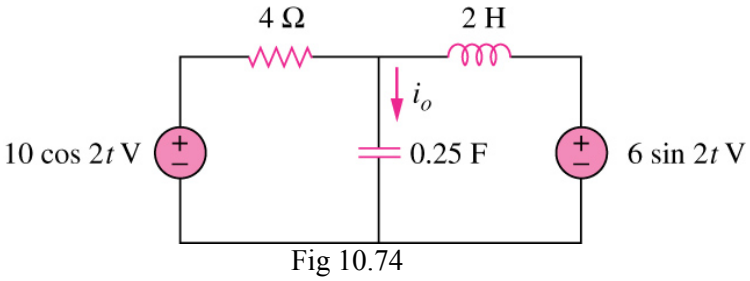

Fig 10.74

Part 3: Superposition (different source frequencies)

Q5 Alexander P10.40
Find i_o in the circuit of Fig 10.84.

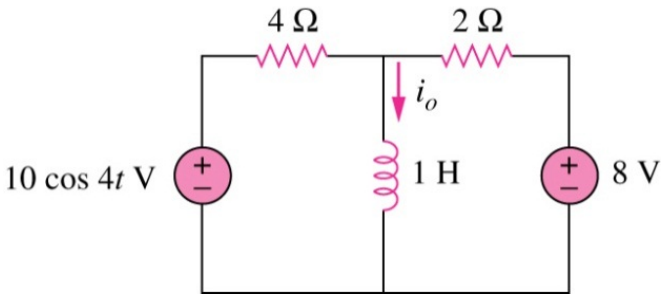

Fig 10.84

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

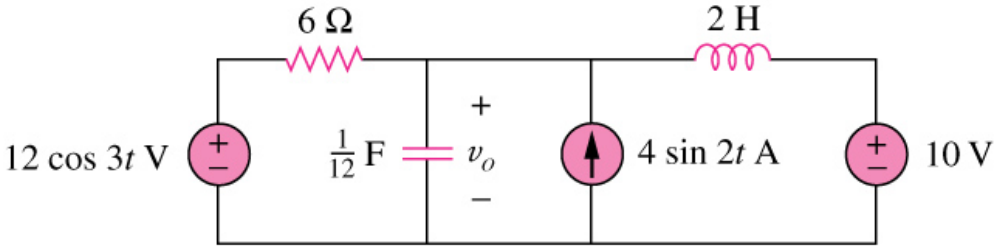

Fig 10.89

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

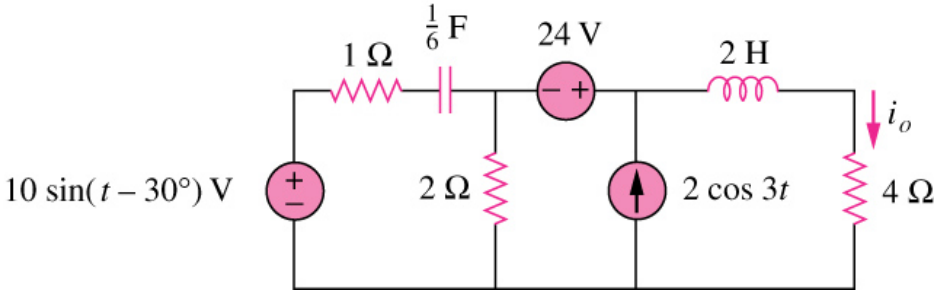

Fig 10.90

Numerical answers

Analysis with single source

Q1 Alexander P9.46
$i_o = 2.325 \cos(10t + 94.46^o)$ A

Q2 Alexander P9.48
$i_x = 0.4338 \cos(100t - 80.6°)$ A

Analysis with multiple sources of same frequency

Q3 Alexander P10.7
$V = 124.08\angle -154^o$ V

Q4 Alexander P10.25
Current: $i_o = 1.4142 \cos(2t + 45^o)$ A

Superposition (Different frequency sources)

Q5 Alexander P10.40
Current: $i_o = 4 + 0.79 \cos(4t - 71.56°)$ A

Q6 Alexander P10.46
Voltage: $v_o = 10 + 21.45 \sin(2t + 26.56°) + 10.73 \cos(3t - 26.56°)$ V

Q7 Alexander P10.47
Current: $i_o = 4 + 0.504 \sin(t + 19.1°) + 0.3352 \cos(3t - 76.43°)$ A