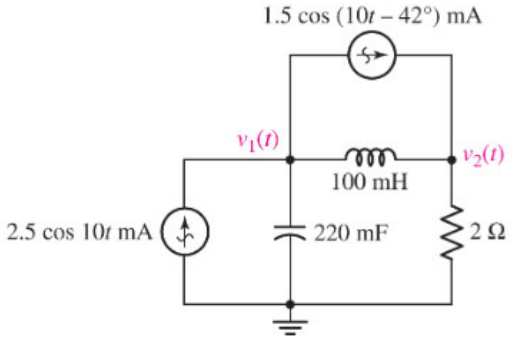
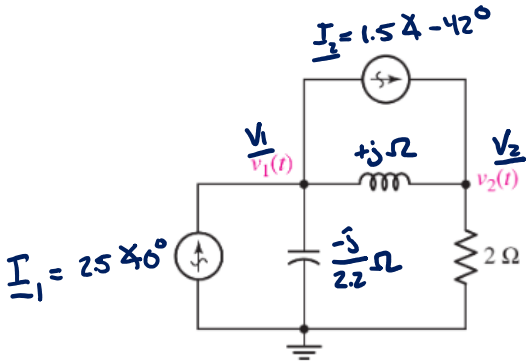


FIGURE 10.59

49. Referring to the circuit of Fig. 10.59, employ phasor-based analysis techniques to determine the two nodal voltages.



By superposition, with $\underline{I}_1$ on

$$\underline{V}_1 = \left(\underline{I}_1 \cdot \frac{-j}{2.2}\Omega\right) \frac{2+j\Omega}{2+j\left(1-\frac{1}{2.2}\right)\Omega} - \left(\underline{I}_2 \cdot \frac{-j}{2.2}\Omega\right)\left(\frac{j\Omega}{2+j\left(1-\frac{1}{2.2}\right)\Omega}\right)$$

with $\underline{I}_2$ on

↑ thevenin equivalent ↑ voltage divider ↑ current divider

$$\underline{V}_2 = \left(\underline{I}_1 \cdot \frac{-j}{2.2}\Omega\right) \frac{2\,\Omega}{2+j\left(1-\frac{1}{2.2}\right)\Omega} + \underline{I}_2 \cdot (2\Omega)\left(\frac{j\Omega}{2+j\left(1-\frac{1}{2.2}\right)\Omega}\right)$$

$$v_1(t) = 0.927\cos(10t - 86^\circ)$$

$$v_2(t) = 0.969\cos(10t - 16.5^\circ)$$