Chapter 9, Solution 39.

For the circuit shown in Fig. 9.46, find Z_{eq} and use that to find current I. Let $\omega=10$ rad/s.

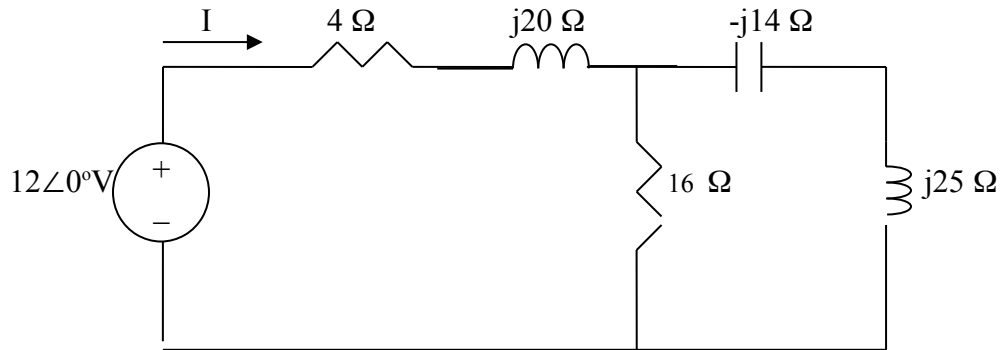Figure 9.46
For Prob. 9.39.

Solution

$$Z_{eq} = 4 + j20 + 10 // (-j14 + j25) = \underline{9.135 + j27.47} \ \Omega$$

$$= \textbf{(9.135+j27.47) } \Omega$$

$$I = \frac{V}{Z_{eq}} = \frac{12}{9.135 + j27.47} = 0.4145 < -71.605^{\circ}$$

$$i(t) = \textbf{414.5cos(10t–71.6°) mA}$$