

Chapter 11, Solution 58.

Obtain the complex power delivered to the 10-k Ω resistor in Fig. 11.77 below.

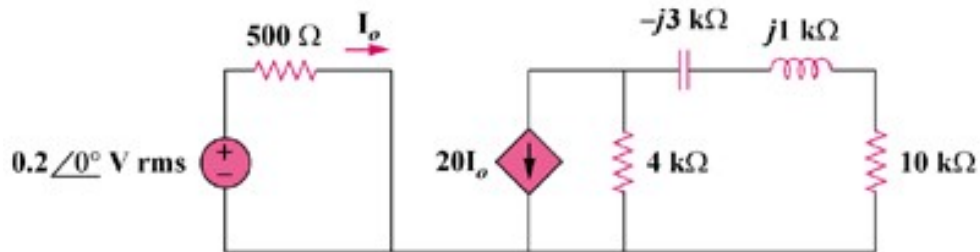


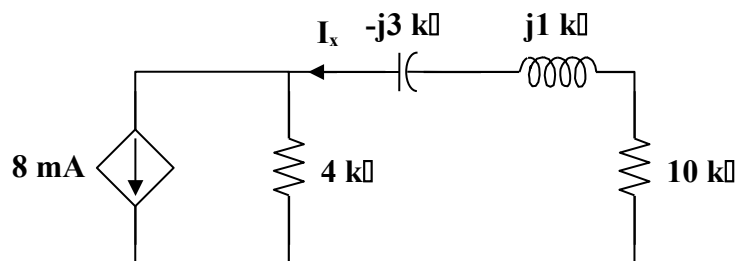
Figure 11.77
For Prob. 11.58.

Solution

From the left portion of the circuit,

$$I_o = \frac{0.2}{500} = 0.4 \text{ mA}$$

$20I_o = 8 \text{ mA}$ which then leads to the following circuit,



From the right portion of the circuit,

$$I_x = \frac{4}{4 + 10 + j - j3} (8 \text{ mA}) = \frac{16}{7 - j} \text{ mA}$$

$$S = |I_x|^2 R = \frac{(16 \times 10^{-3})^2}{50} \cdot (10 \times 10^3)$$

$$S = 51.2 \text{ mVA}$$

It should be noted that the complex power delivered to a resistor is always watts.