**Chapter 11, Solution 64.**

Determine $I_s$ in the circuit shown in Fig. 11.83, if the voltage source supplies 2.5 kW and 0.4 kVAR (leading).

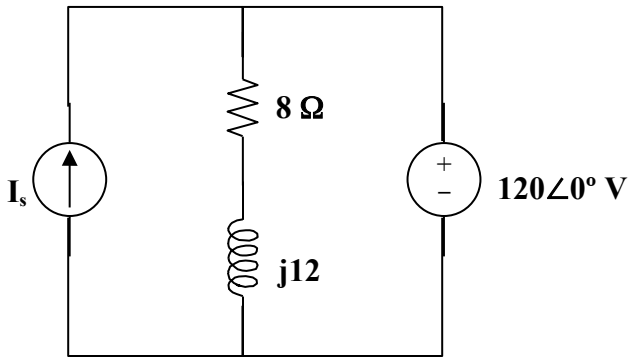
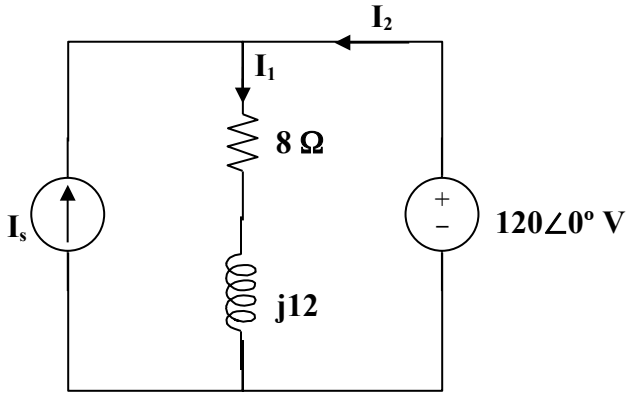



Figure 11.83
For Prob. 11.64.

**Solution**




$I_s + I_2 = I_1$ or $I_s = I_1 - I_2$

$$I_1 = \frac{120}{8 + j12} = 4.615 - j6.923$$

$$S = VI_2^* \longrightarrow I_2^* = \frac{S}{V} = \frac{2500 - j400}{120} = 20.83 - j3.333$$

$$\text{or } I_2 = 20.83 + j3.333$$

But,

$I_s = I_1 - I_2 = -16.22 - j10.256 = \mathbf{19.19\angle -147.69^\circ\ A}$.