

Chapter 11, Solution 80.

The circuit of Fig. 11.95 portrays a wattmeter connected into an ac network.

(a) Find the load current.

(b) Calculate the wattmeter reading.

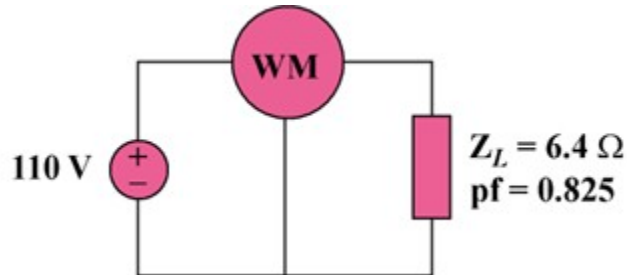


Figure 11.95
For Prob. 11.80.

Solution

$$(a) \quad |I| = \frac{|V|}{|Z|} = \frac{110}{6.4} = 17.19 \text{ A}$$

$$(b) \quad |S| = \frac{|V|^2}{|Z|} = \frac{(110)^2}{6.4} = 1890.6$$

$$\cos \theta = \text{pf} = 0.825 \longrightarrow \theta = 34.41^\circ$$

$$P = S \cos \theta = 1559.8 \approx 1.6 \text{ kW}$$