

Chapter 9, Solution 33.

A series RL circuit is connected to a 110-V ac source. If the voltage across the resistor is 85 V, find the voltage across the inductor.

Solution

$$\begin{aligned}110 &= \sqrt{v_R^2 + v_L^2} \\v_L &= \sqrt{110^2 - v_R^2} \\v_L &= \sqrt{110^2 - 85^2} = \mathbf{69.82 \text{ V}}\end{aligned}$$