بسمه تعالی

تمرین سری ٤ | **تئوری مدارهای الکتریکی** | **تحویل: ۱۵ اسفند ۹٤**

مسائل: 9.9, 9.22, 9.68, 9.77, 9.82, 9.89, 9.100, 9.103 از کتاب Irwin

9.9 Find the average power absorbed by the resistor in the circuit shown in Fig. P9.9 if $v_1(t) = 10\cos(377t + 60°)$ V and $v_2(t) = 20\cos(377t + 120°)$ V.

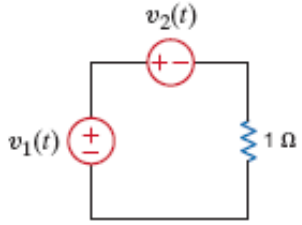

Figure P9.9

9.68 The power company supplies 80 kW to an industrial load. The load draws 220 A rms from the transmission line. If the load voltage is 440 V rms and the load power factor is 0.8 lagging, find the losses in the transmission line.

9.82 Given the network in Fig. P9.82, determine the input voltage $\mathbf{V}_s$.

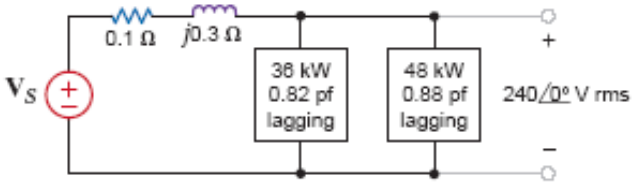

Figure P9.82

9.89 A particular load has a pf of 0.8 lagging. The power delivered to the load is 40 kW from a 270-V rms 60-Hz line. What value of capacitance placed in parallel with the load will raise the pf to 0.9 lagging?

9.103 A single-phase three-wire 60-Hz circuit serves three loads, as shown in Fig. P9.103. Determine $\mathbf{I}_{aA}$, $\mathbf{I}_{nN}$, $\mathbf{I}_c$, and the energy use over a 24-hour period in kilowatt-hours.

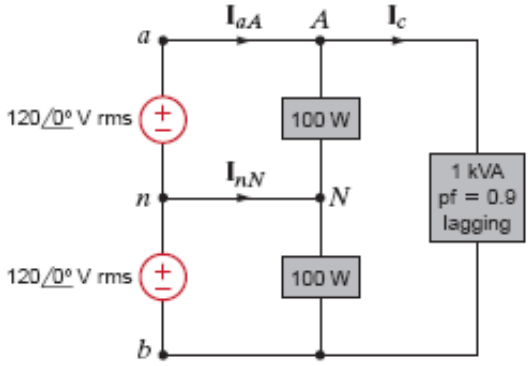

Figure P9.103

9.22 Calculate the average power absorbed by the 1-Ω resistor in the network shown in Fig. P9.22.

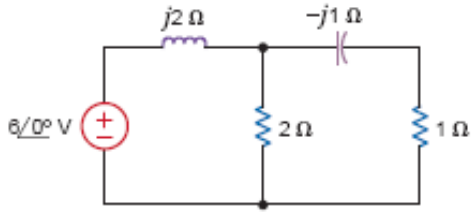

Figure P9.22

9.77 In the circuit shown in Fig. P9.77, calculate $\mathbf{V}_s$, the complex power supplied by the source, and the power factor of the source.

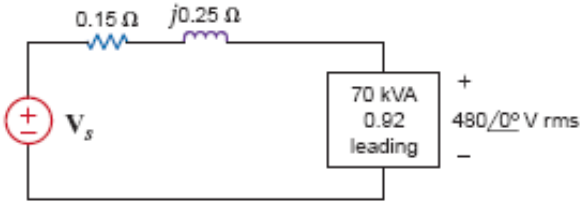

Figure P9.77

9.100 A 5.1-kW household range is designed to operate on a 240-V rms sinusoidal voltage, as shown in Fig. P9.100a. However, the electrician has mistakenly connected the range to 120 V rms, as shown in Fig. P9.100b. What is the effect of this error?

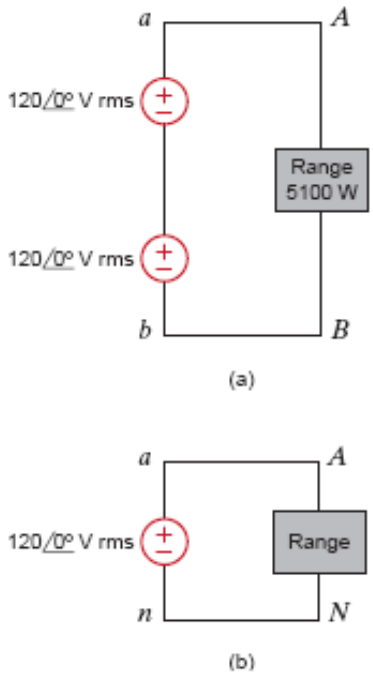

Figure P9.100