

Problem 16-8+11+16+29

**16-8** A load draws 8 kW at a power factor of 0.8 leading from a 880-V(rms) source. Find  $Q$  and the load impedance.

$$Q = -6000 \text{ VAR} ; Z = 61,95 - j46,46 \Omega$$

**16-11** A load made up of a  $100\text{-}\Omega$  resistor in series with a  $150\text{-mH}$  inductor is connected across a  $240\text{-V(rms)}$ ,  $60\text{-Hz}$  voltage source. Find the complex power delivered to the load and the load power factor. State whether the power factor is lagging or leading.

$$S = 436,4 + j246,8 \text{ VA} ; \text{pf} = 0,8705 \text{ lagging} = \text{induktiv.}$$

**16-16** In Figure P16-16 the load  $Z_L$  is a  $100\text{-}\Omega$  resistor and the source voltage is  $240 \text{ V(rms)}$ . Find the complex power produced by the source.

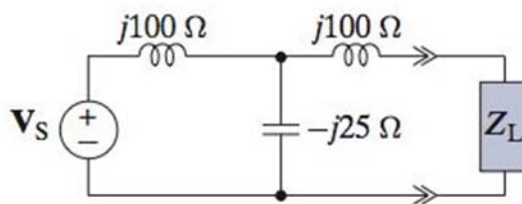


FIGURE P16-16

$$S = 44,31 + j797,5 \text{ VA}$$

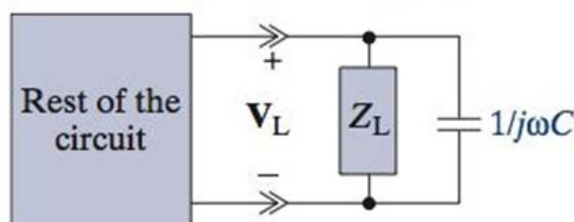


FIGURE P16-28

**16-29** In Figure P16-28 the load voltage is  $|\mathbf{V}_L| = 2400 \text{ V(rms)}$  at  $60 \text{ Hz}$ . The load  $Z_L$  draws an apparent power of  $25 \text{ kVA}$  at a lagging power factor of  $0.7$ . Find the value of the capacitance required to raise the overall power factor of the parallel combination to  $0.95$ . Repeat this problem for an overall power factor of unity.

$$C = 8,222 \mu\text{F}$$