1. Use nodal analysis to find **V** in the circuit
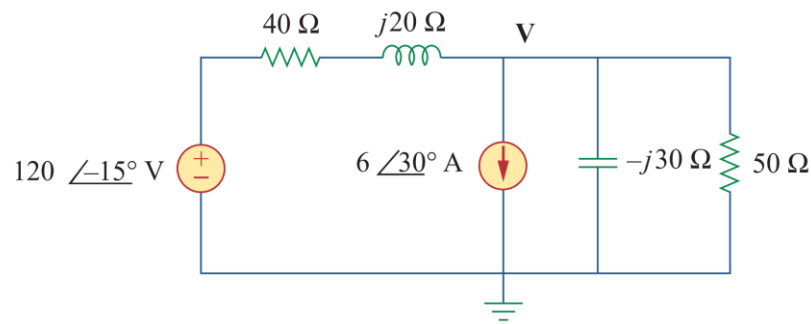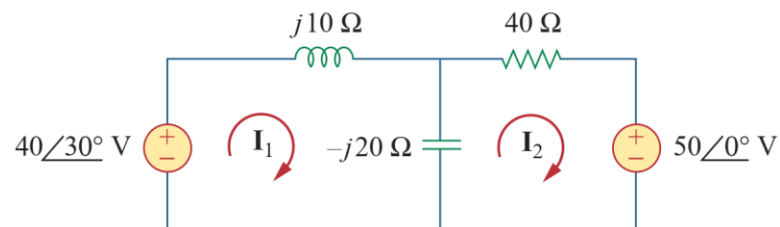

2.

In the circuit of Fig.   determine the mesh currents i_1 and i_2. Let $v_1 = 10 \cos 4t$ **V** and $v_2 = 20 \cos(4t - 30°)$ V.
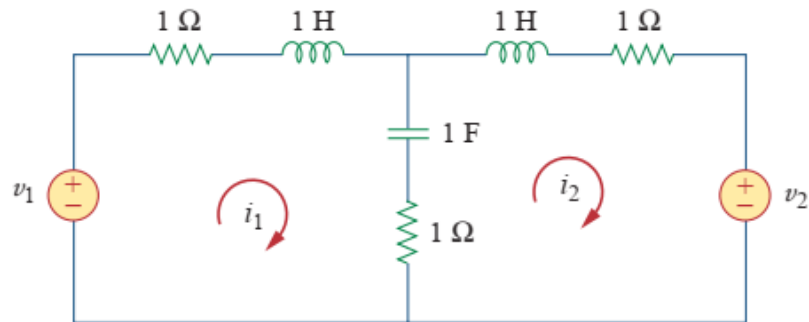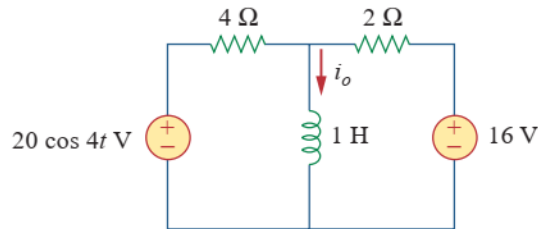

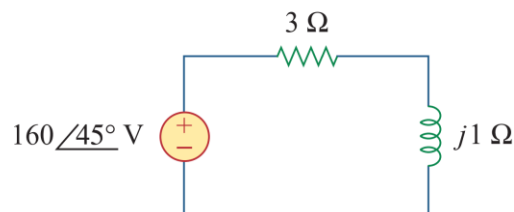3.

Using mesh analysis, find I_1 and I_2 in the circuit

4.

Find i_o in the circuit shown in Fig.   using superposition.


4 Ω   2 Ω

i_o

20 cos 4t V   1 H   16 V

5.

In the circuit of Fig.   calculate the average power absorbed by the resistor and inductor. Find the average power supplied by the voltage source.

3 Ω

160∠45° V   j1 Ω

6.

Obtain the power factor and the apparent power of a load whose impedance is $Z = 60 + j40\ \Omega$ when the applied voltage is $v(t) = 160\cos(377t + 10°)$ V.

7.

A sinusoidal source supplies 20 kVAR reactive power to load $Z = 250\angle{-75°}\ \Omega$. Determine: (a) the power factor, (b) the apparent power delivered to the load, and (c) the rms voltage.

8. Find the V_s

0.2 Ω j0.04 Ω   0.3 Ω j0.15 Ω

+

V_s

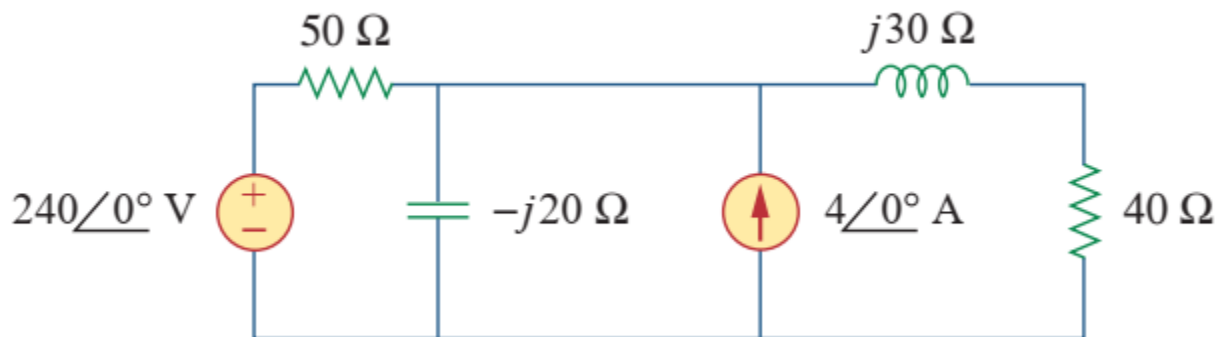| 10 W | 15 W |
| 0.9 pf lagging | 0.8 pf leading |

120 V rms

−
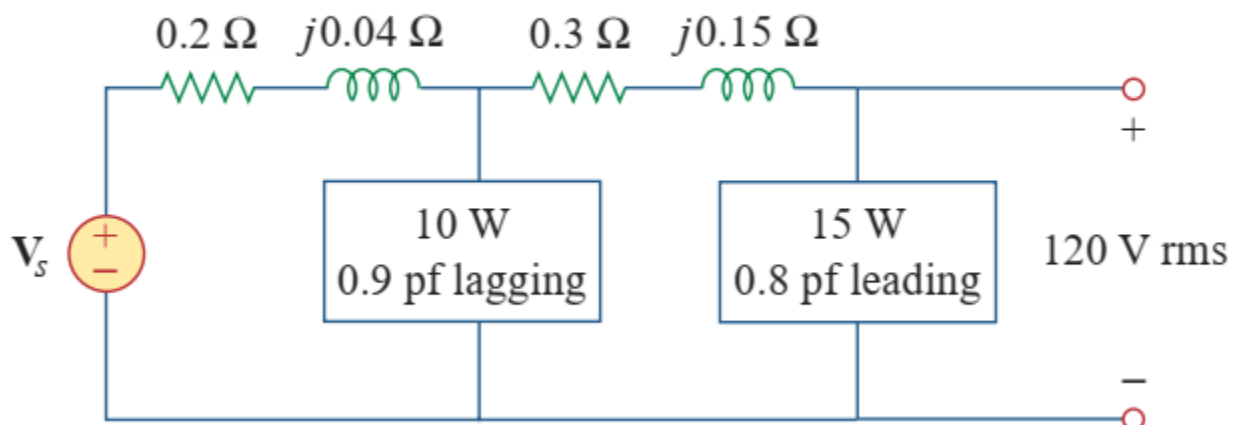
9. Calculate

    (a) the power factor

    (b) the average power delivered by the source

    (c) the reactive power

    (d) the apparent power

    (e) the complex power
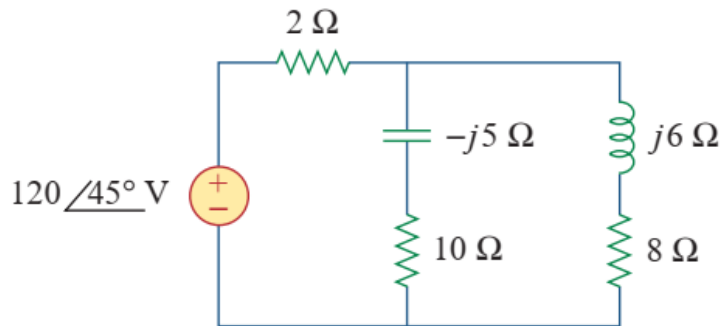
10. Calculate the reactive in energy storage elements in the circuit

11. Find I_o in the circuit