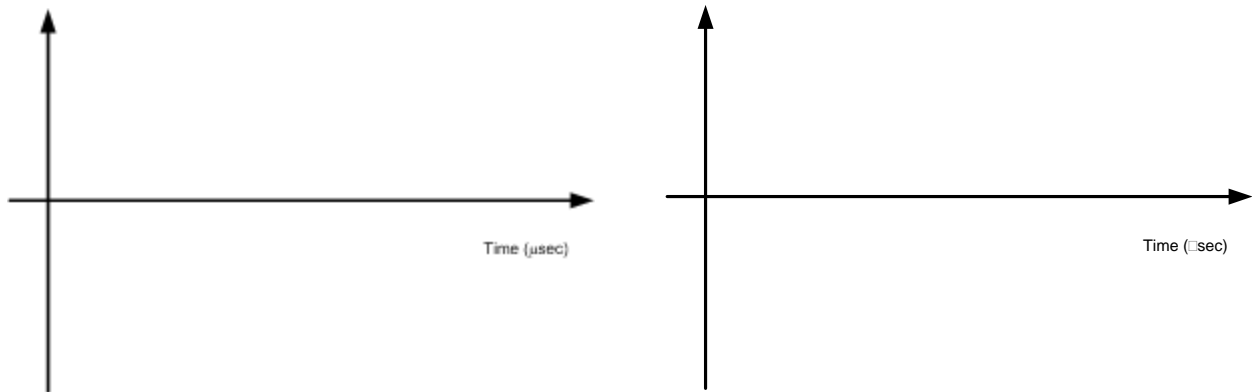1. (4 points) On the axes given below, draw two different waveforms that each have an rms value of 1.0 Volts. Label the waveforms sufficiently that it is possible to calculate that rms value of 1.0 Volts from the labels that you provide.

Time (μsec)   Time (□sec)

2. (10 points) For the small power system shown below, the voltages and currents are as labeled. The three loads are identical.

$4.2 \angle -25^{\circ}$ Amps

j 5 Ohms

+
-

$240 \angle 0^{\circ}$ V

Load 1   Load 2   Load 3
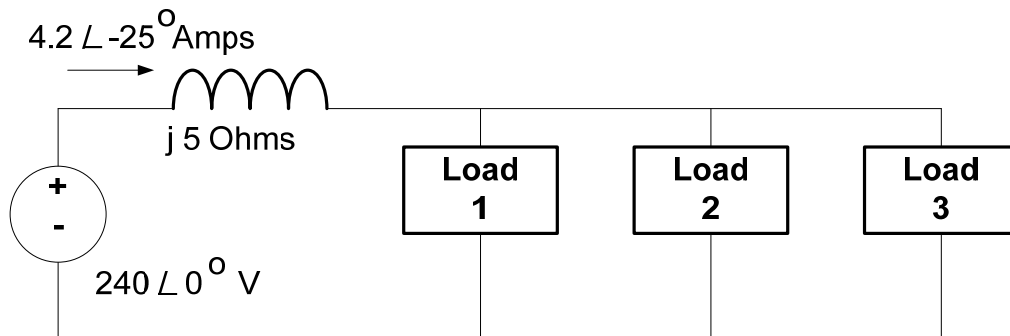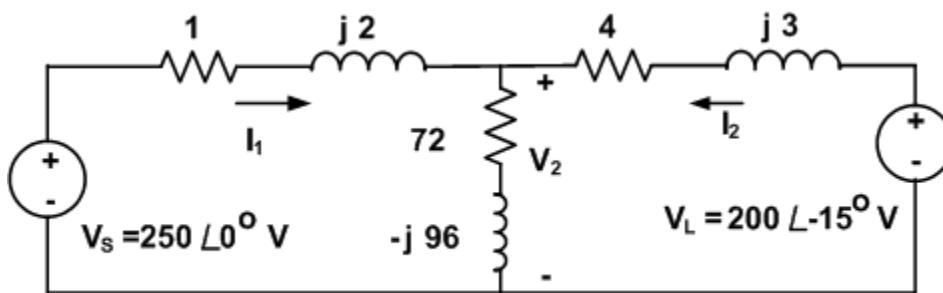
a. (3 points) Find the voltage across the loads.

b. (5 points) Find the real and reactive power consumed in one of the loads.

There is more on the other side of this page.

    c. (2 points) If the frequency is 50 Hertz, what is the inductance of the line that connects the source to the loads?

3. (6 points) For the circuit shown below, write a set of linearly independent equations that can be solved for the voltage V_2 and the current I_2. You need not solve the equations; just write them.

Units for impedances are Ohms

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