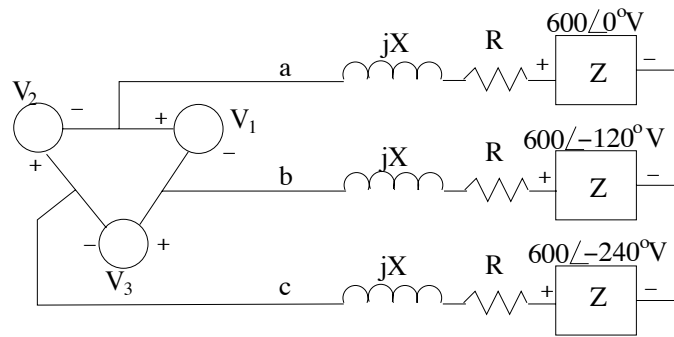


EE30372 - Electric Machinery and Power Systems Analysis
Quiz 1, 10 February, 2011



Above is a balanced, three-phase system, in which line impedances are $X = 1$, $R = 0.5$. The three-phase load is consuming 21 kW at power factor 0.8 lagging.

(a) Find the complex current in the b phase line, the load impedance Z , and the total real and reactive power loss in the lines.

(b) Find the complex value \mathbf{V}_3 , and sketch a per-phase equivalent circuit for the system, labeled with numerical values for voltages and currents.