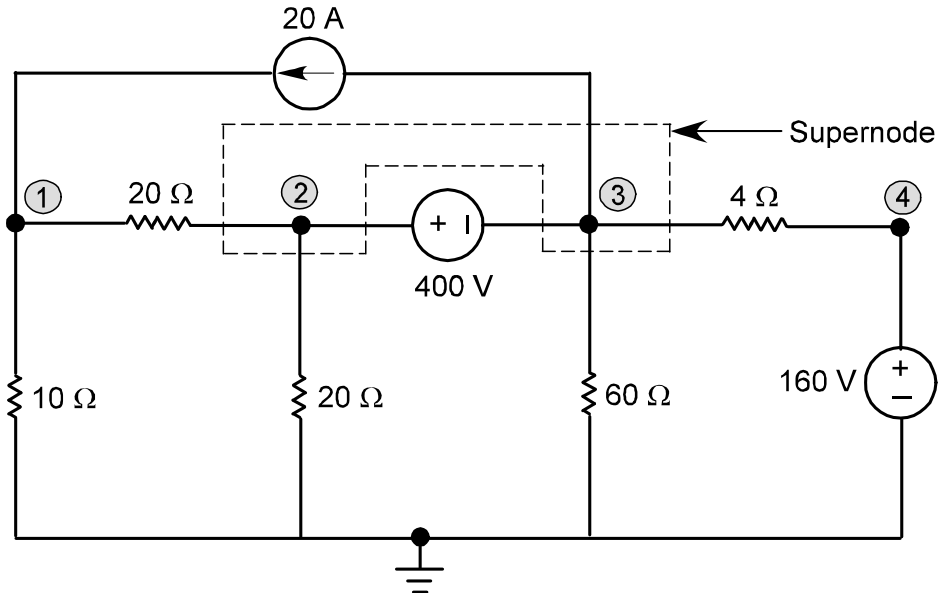
Homework Set #12
DUE Tuesday, April 4, 2017

1.

a) Write the nodal equations needed to solve for all nodal voltages in the following circuit. ***Do not attempt to solve these equations.***



b) Assume the answer to part (a) is the following set of equations (NOTE: this is ***not*** the answer to part (a)). Solve them for all nodal voltages.

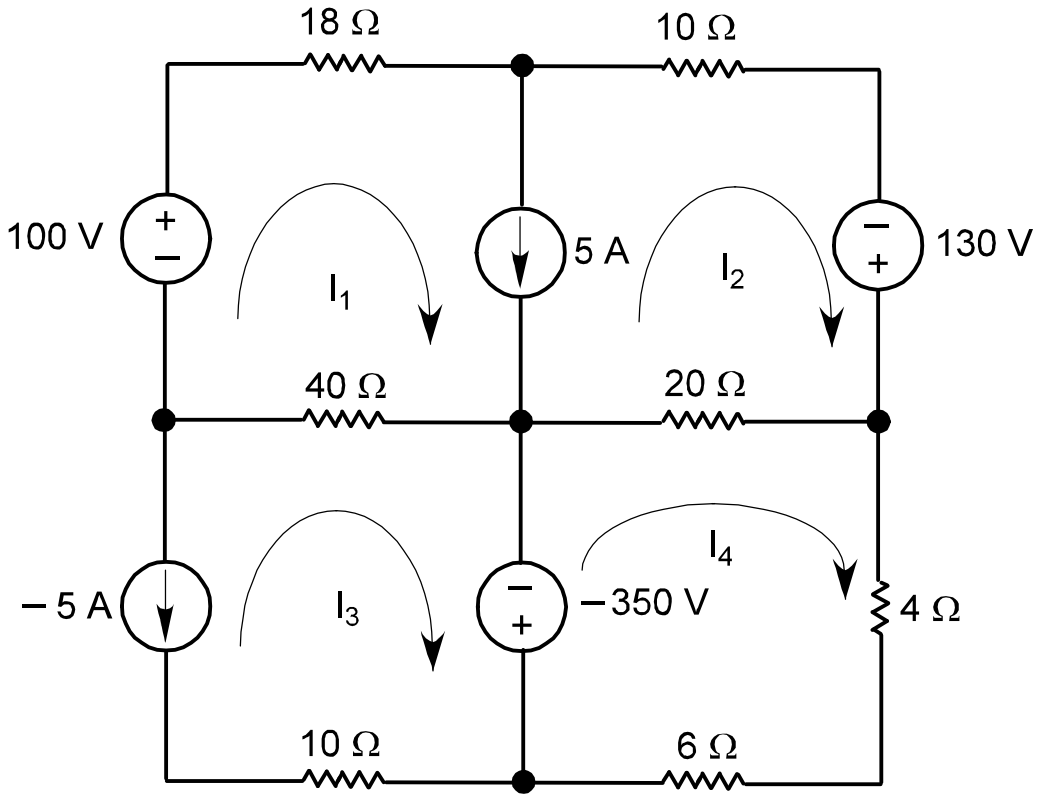
$V_2 = V_3 + 600$ and $V_4 = 240$

$$\frac{V_1}{10} + \frac{V_1 - V_2}{20} - 15 = 0$$

$$\frac{V_2 - V_1}{20} + \frac{V_2}{20} + 15 + \frac{V_3}{60} + \frac{V_3 - V_4}{4} = 0$$

2.

a) Write the mesh equations needed to solve for all mesh currents in the following circuit. ***Do not attempt to solve these equations.***



b) Assume part of the answer to part (a) is I_4 = 10 A (NOTE: this is ***not*** the answer to part (a)). Determine the power ***produced*** by the -350 V source.

3. For the following circuit:

a) determine all nodal voltages using nodal analysis, and

b) determine all mesh currents using mesh analysis.