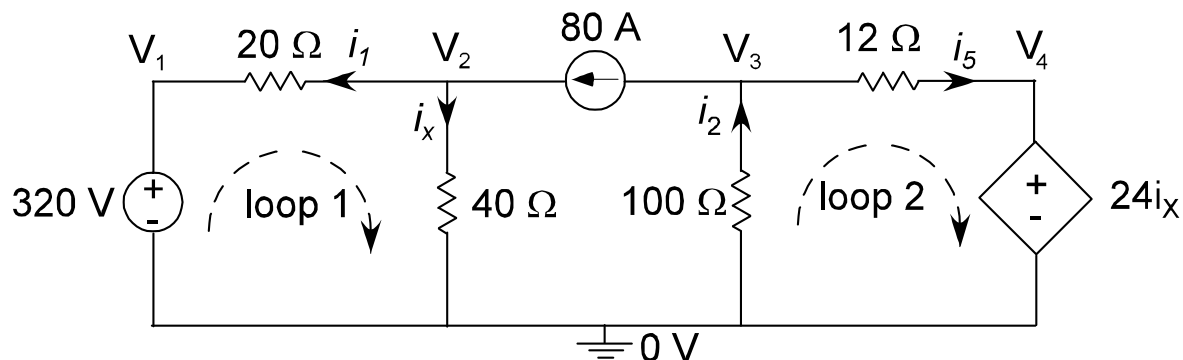


**Homework Set #3****Coverage:** KCL, KVL, Dependent Sources**DUE Tuesday, March 14, 2017**

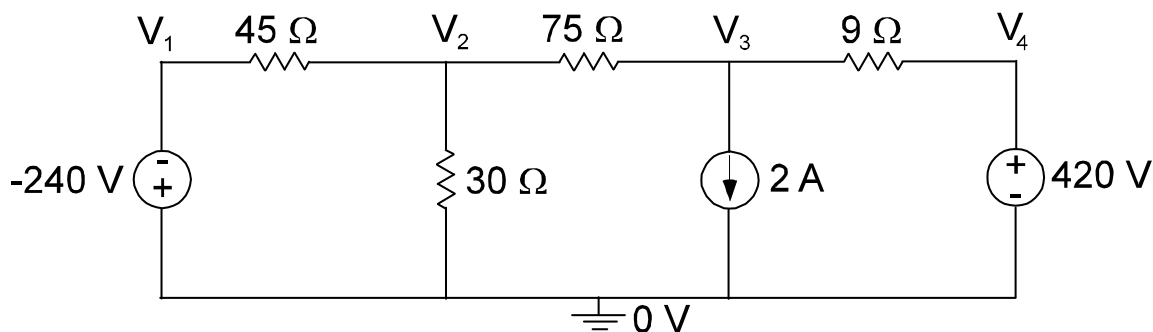
1. Consider the following network:



- Write KCL equations at nodes  $V_2$  and  $V_3$  in terms of the nodal voltages ( $V_1$ ,  $V_2$ ,  $V_3$ , and  $V_4$ ) defined above. (HINT: You need to write  $i_x$  as  $i_x = V_2/40$ .)
- Write KVL equations for loops 1 and 2 in terms of the branch currents ( $i_1$ ,  $i_2$ ,  $i_x$ , and  $i_5$ ) defined above. (HINT: Leave  $i_x$  alone here.)
- Write an equation for  $i_5$  in terms of  $i_x$  and  $V_3$ .

You don't need to solve the equations.

2. Use KCL and/or KVL to derive 2 equations in 2 unknowns for the following circuit and then solve for all nodal voltages.



3. Find the value of  $V_x$  and calculate the power dissipated in each element

