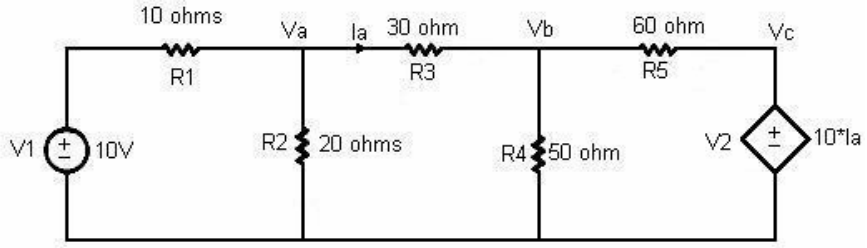
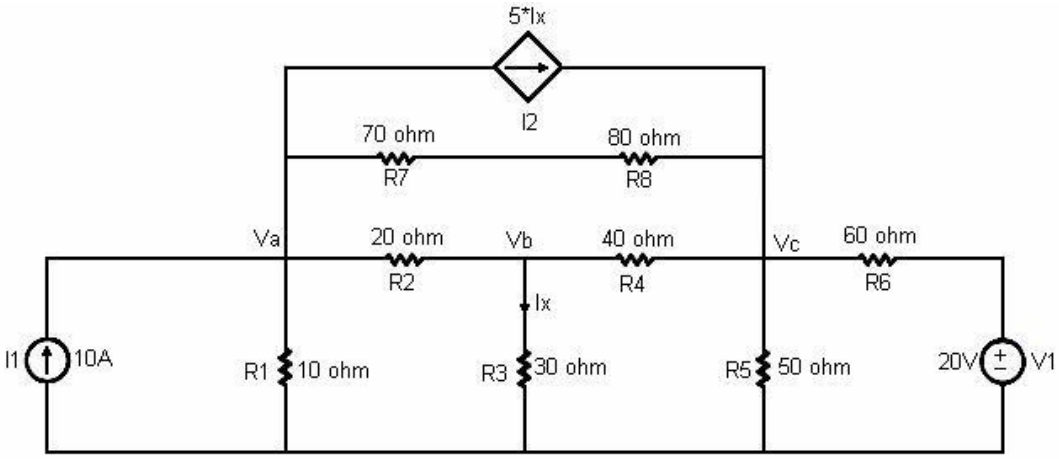
ECE 201: Linear Circuit Analysis I:
Chapter 4: Nodal Analysis

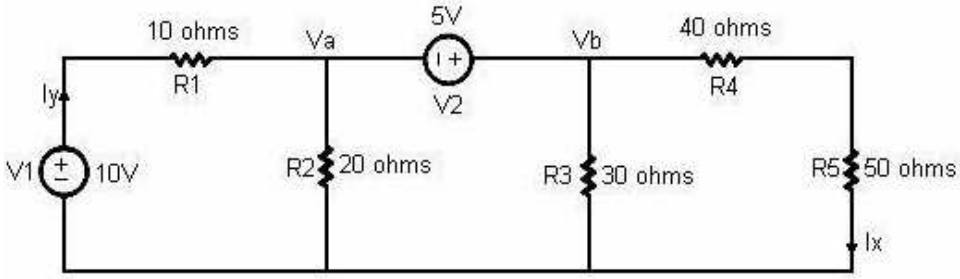
1. Find the node voltages v_a, v_b, & v_c. Also, find i_x and find the power delivered by the two 10V voltage source and the current dependent voltage source. What is the power absorbed by the 30Ω resistor?



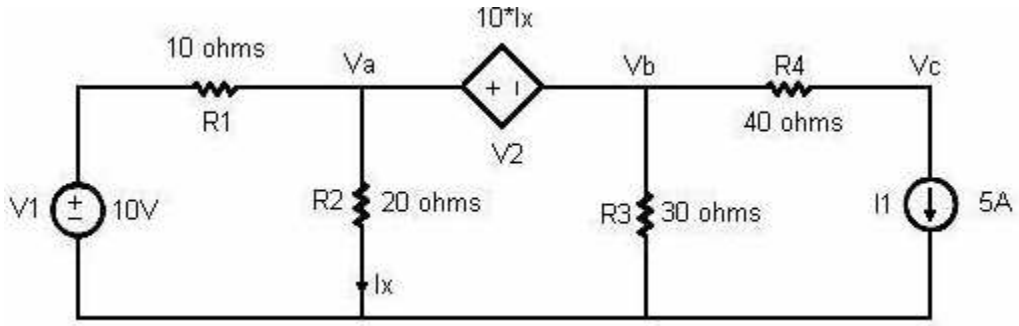
2. Find i_x, the current in the 70Ω resistor, the power delivered by the 20V voltage source, and the 10A current source. Finally, what is the power absorbed by all the resistors? (Hint: Don't do it the *obvious* way)



3. Find the node voltages v_a, & v_b, Also, find i_z & i_y.



4. Find the node voltages $v_{a,}\, v_b$. Also, find i_x as well as the power delivered/absorbed by the current dependant voltage source.



5. For all of the above problems, compare and contrast both the mesh current method and the node voltage method. Which method is better and why? Describe a way to figure out which analysis technique to use when presented with a circuit network to solve.

6. Pick one circuit from above and write a MATLAB program to solve for the numerical values of the unknowns. I will try to get Dr. Kozel to offer some extra credit to those who write one or more programs.

WEATHER YOU ARE AN ME OR AN EE, YOUR ABILITY TO WRITE MATLAB PROGRAMS IS IMPORTANT AS IT WILL BECOME A VITAL TOOL IN YOUR LATER CLASSES.