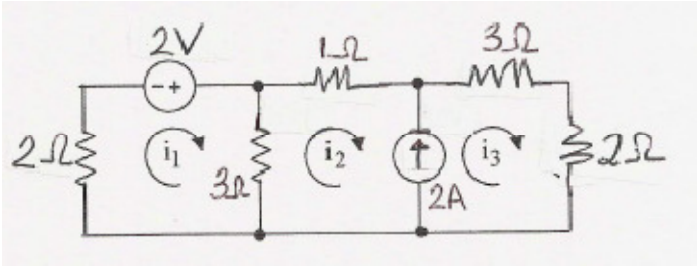
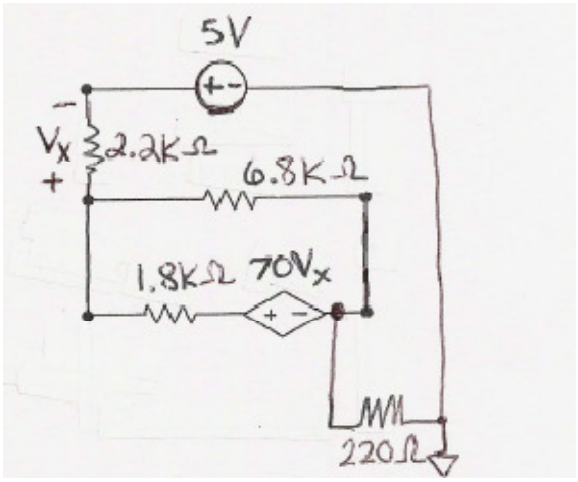
1. Use the mesh-current method to find i_1 and i_2, and i_3.

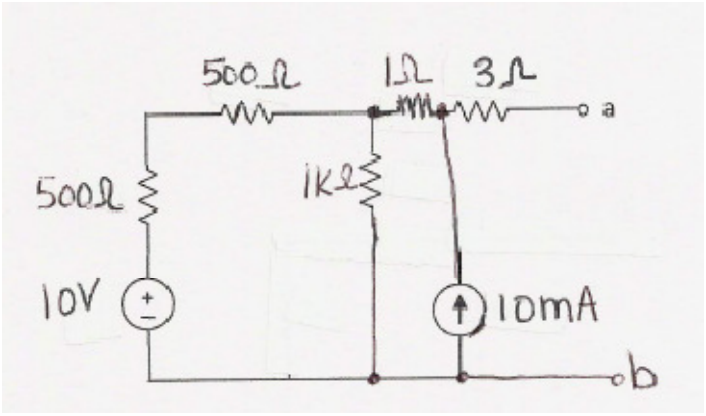


2. a. Use the mesh-current method to find V_x, V_x must not be in equation.

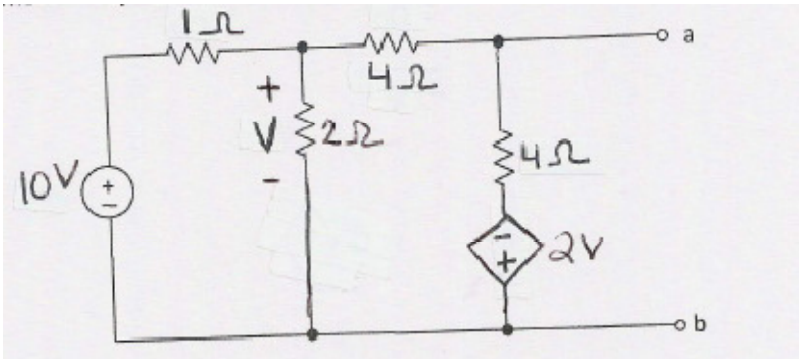
   b. Find power dissipated by the dependent source.



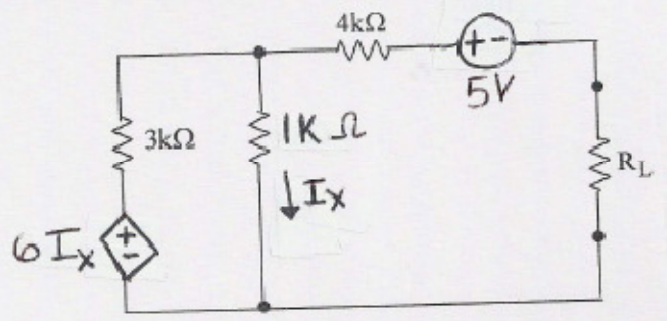
3. Find the Thevenin equivalent circuit at terminals a-b.



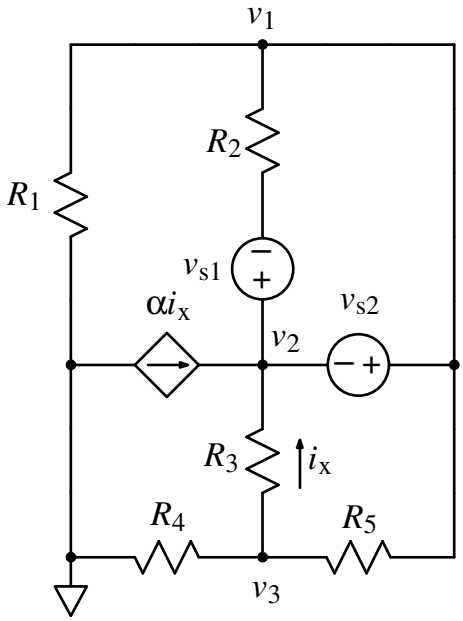
4. Find the Thevenin equivalent circuit at terminals a-b.



5. Determine the power in the dependent source if R_L =2kΩ



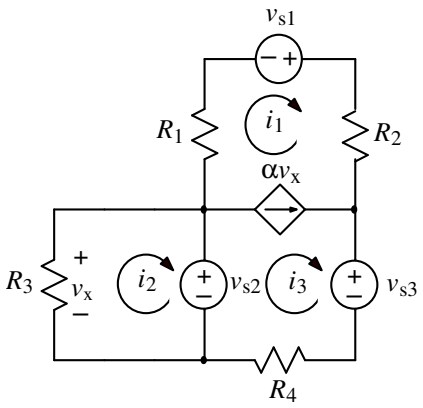
6.



For the circuit shown, write three independent equations for the node voltages v_1, v_2, and v_3. The quantity i_x must not appear in the equations.

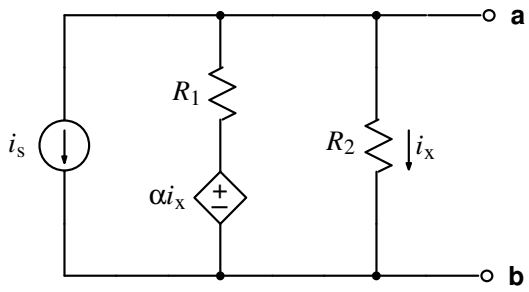
7. Make a consistency check on your equations for Problem 6 by setting resistors and sources to values for which the values of v_1, v_2, and v_3 are obvious. State the values of resistors, sources, and node voltages for your consistency check, and show that your equations for problem 6 are satisfied for these values. (In other words, plug the values into your equations for problem 1(a) and show that the left side and the right side of each equation are equal.)

8.



For the circuit shown, write three independent equations for the three mesh currents i1, i2, and i3. The quantity vx must not appear in the equations.

9.



Find the Thevenin equivalent circuit at terminals **a** and **b**. i_X must not appear in your solution. **Note:** $\alpha > 0$.

10. Calculate the power consumed (i.e., dissipated) by the $2v_X$ dependent source. **Note:** If a source supplies power, the power it consumes is negative.