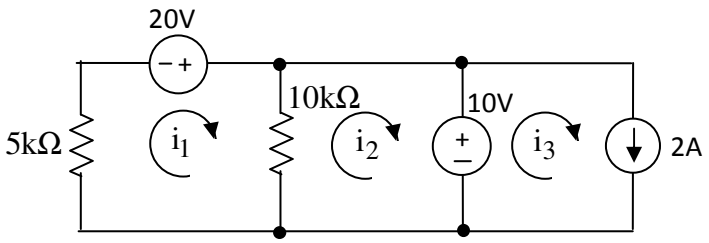
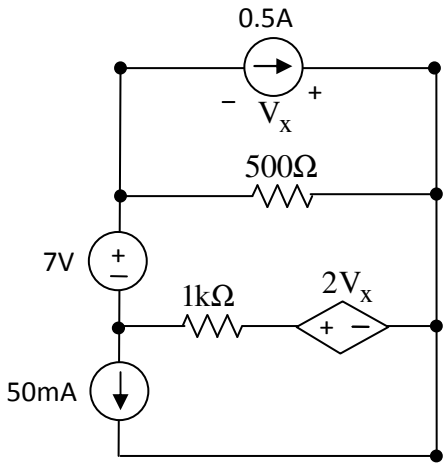
1. Use the mesh-current method to find i_1 and i_2, and i_3.

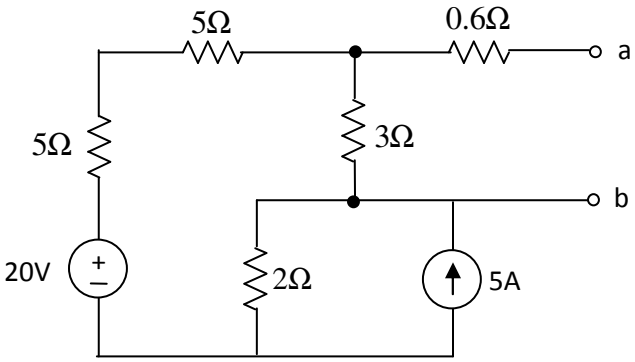


2. a. Use the mesh-current method to find V_x, V_x must not be in equation.

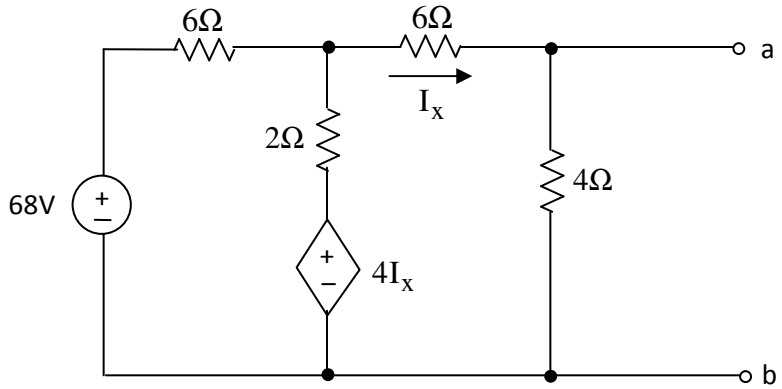
   b. Find power dissipated by the dependent source.



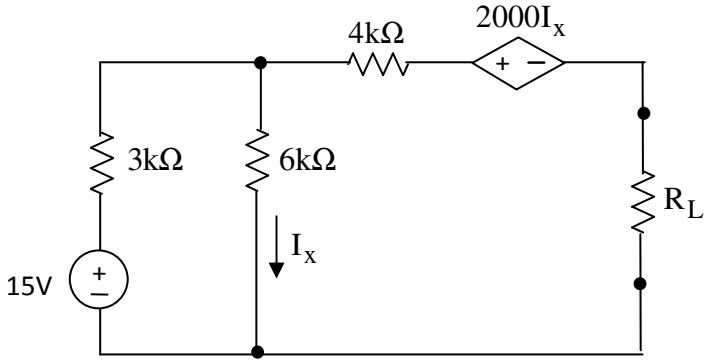
3. Find the Thevenin equivalent circuit at terminals a-b.



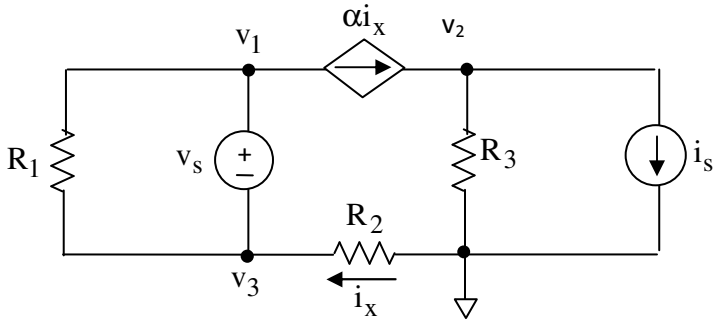
4. Find the Thevenin equivalent circuit at terminals a-b.



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

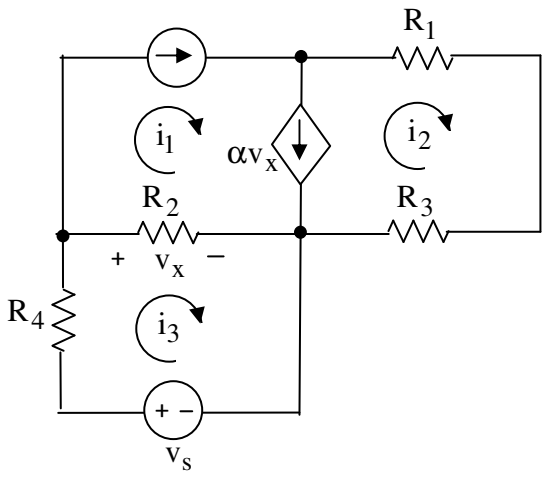


6. For the circuit shown, write three independent equations for the node voltages v_1, v_2, and v_3. The quantity i_x must not appear in the equations.

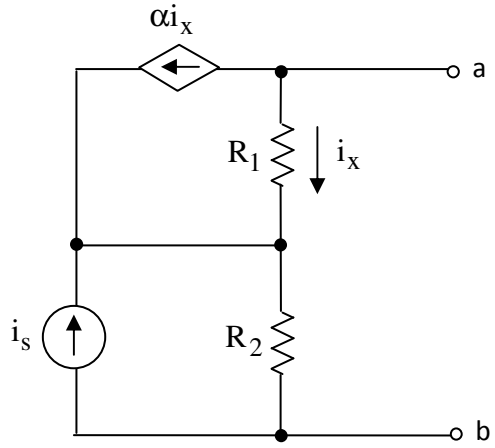


7. Make a consistency check on your equations for Problem 1 by setting resistors and sources to values for which the values of v_1, v_2, and v_3 are obvious. State the values of resistors, sources, and noe voltages for your consistency check, and show that your equations for Problem 1 are satisfied for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

8. For the circuit shown, write three independent equations for the three mesh currents, i_1, i_2, and i_3. The quantity v_x must not appear in the equations.



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



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