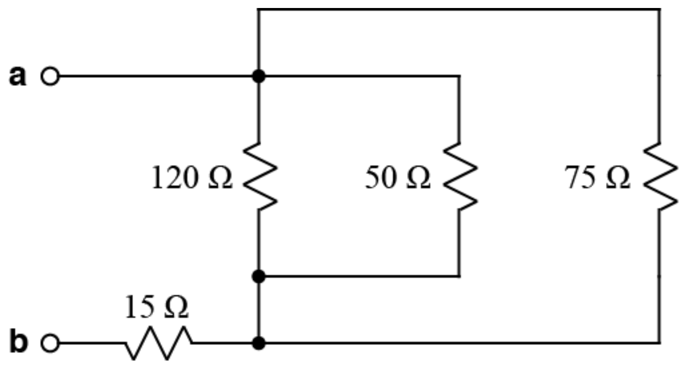
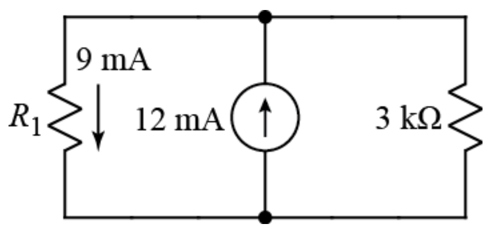
Homework 3

1.

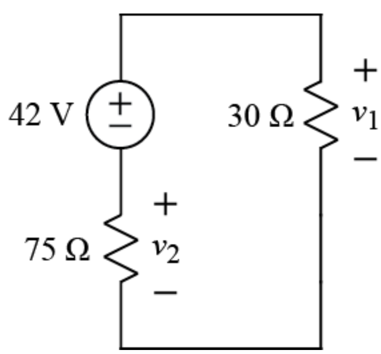


Find the value of total resistance between terminals **a** and **b**.

2.

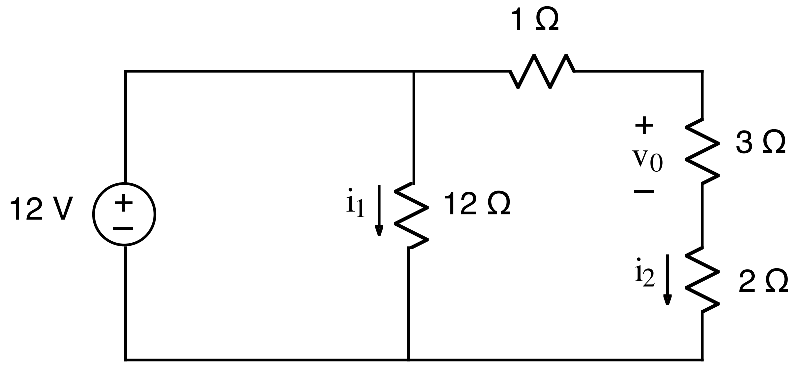


a) Use the current-divider formula to determine what the value of R_1 must be.



b) Use the voltage-divider formula to calculate v_1 and v_2. (Be careful about signs.)

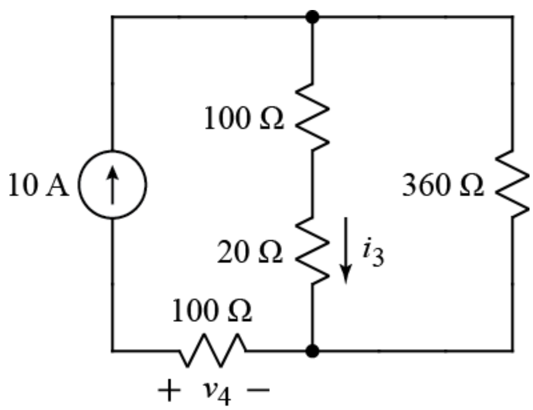
3.



a) Calculate i_1, i_2, and v_0.

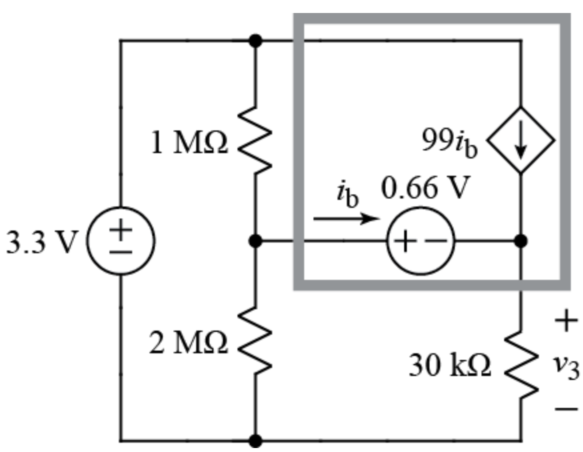
b) Find the power dissipated for every component, including the voltage source.

4.



Calculate i_3 and v_4.

5.



Find i_b, v_3, and the power dissipated by the components in the box.

ANS: 1. 39 Ωl 2.a) 1 kΩ 2.b) $v_1 = 12$ V, $v_2 = -30$ V

3.a) $i_1 = 1$ A, $i_2 = 2$ A, $v_0 = 6$ V 4. $i_3 = 7.5$ A, $v_4 = -1$ kV

5. $i_b = 0.42$ μA, $v_3 = 1.26$ V, $p = 85.1$ μW