

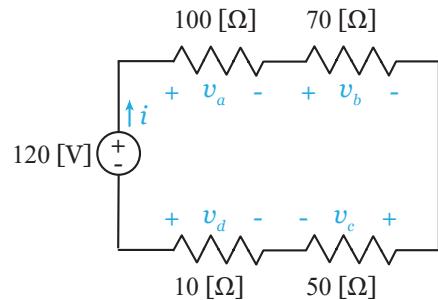
Homework #3

MEMS 0031 - Electrical Circuits

Assigned January 25th, 2019
Due February 1st, 2019

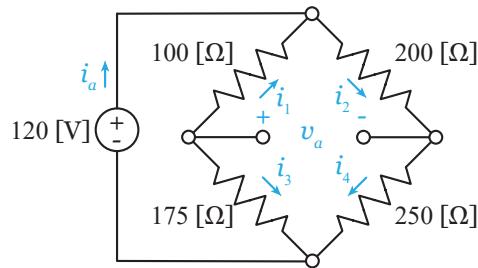
Problem #1

Find the voltage drop across each resistor, as shown in the circuit below, i.e. v_a , v_b , v_c and v_d . Also determine the current i flowing through the resistors.



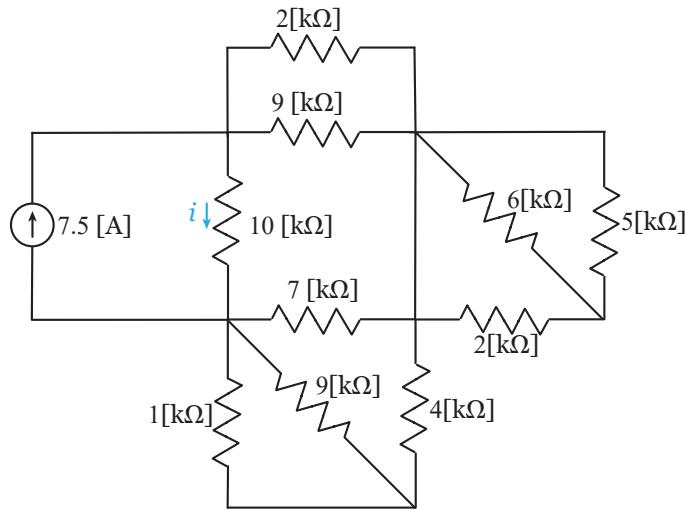
Problem #2

Find the voltage drop across each the open circuit, v_a , in the circuit shown below. Also determine the current flow through each segment of the circuit.



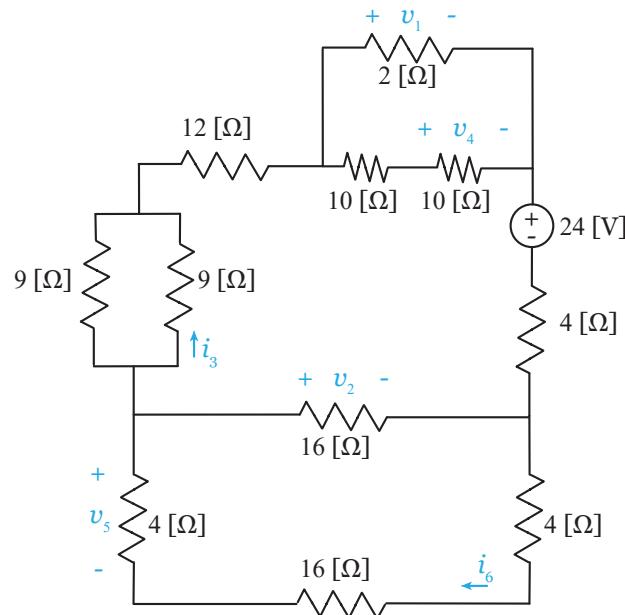
Problem #3

Find the voltage drop across the $10 \text{ [k}\Omega\text{]}$ resistor. Also determine the power dissipated by the circuit.



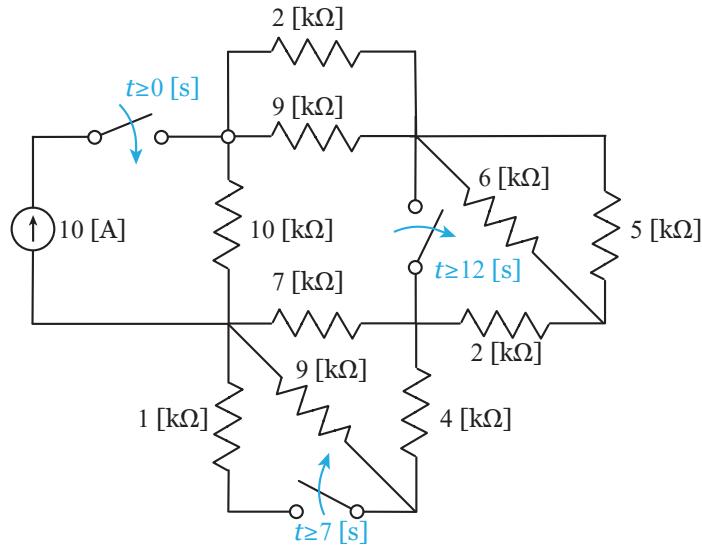
Problem #4

Determine the values of v_1 , v_2 , i_3 , v_4 , v_5 , and i_6 in the circuit shown below.



Problem #5

Assume no energy has been dissipated by the circuit prior to $t=0$ [s]. Determine the total energy dissipated by the circuit at $t=5$, 10 and 15 [s]. Assume the switch behavior is instantaneous at the times indicated.



Problem #6

For the circuit shown below, determine the voltage v across the load resistance R_L when $V_s=15$ [V], $R_x=100$ [Ω], $a=0.36$ and $R_L=150$ [Ω]. Determine the power dissipated by each resistor.

