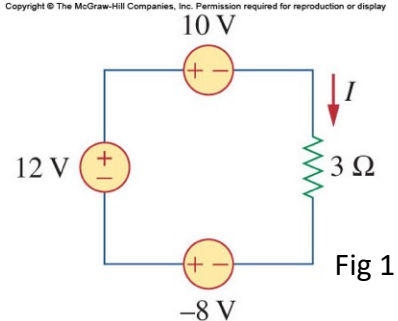


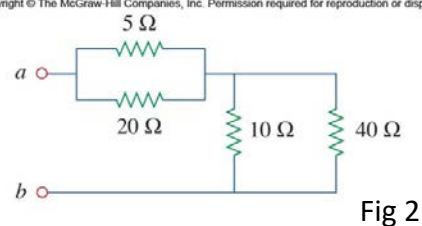
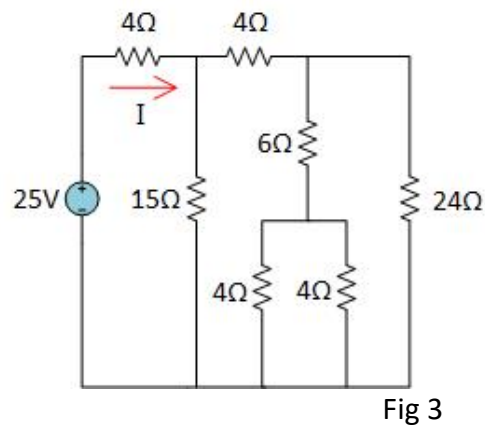
Student ID: \_\_\_\_\_ Student Name: \_\_\_\_\_ Group: \_\_\_\_\_

1) For the circuit in Fig 1, find (a) the voltage across  $3\ \Omega$ , (b) current  $I$ .

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2) Calculate the equivalent resistance  $R_{ab}$  at terminals a-b for Fig 2.

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3) For the circuit in Fig 3, find the current  $I$ . Hint: Find the equivalent resistance seen by the source, and use Ohm's law.

4) For the circuit in Fig 4, given the current directions at node 1 and node 2,

i) Circle the correct nodal equation at node 1.

- (a)  $24 = -V_1 - 2V_2$
- (b)  $18 = 7V_1 - 2V_2$
- (c)  $12 = -V_1 - 2V_2$
- (d)  $36 = 7V_1 - 2V_2$

ii) Circle the correct nodal equation at node 2.

- (a)  $3V_1 - 5V_2 = 36$
- (b)  $3V_1 - V_2 = 36$
- (c)  $3V_1 - 5V_2 = -36$
- (d)  $3V_1 - V_2 = -36$

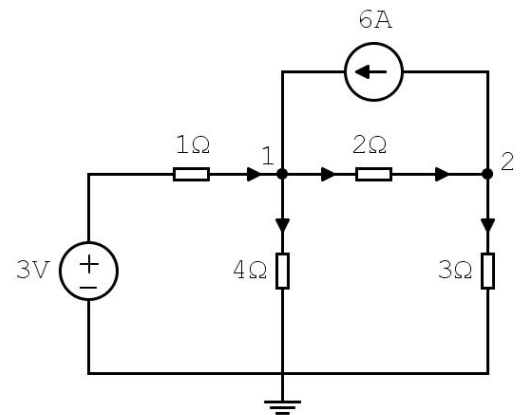


Fig 4

5) By applying nodal analysis at node  $v_2$  of circuit in Fig 5, find  $v_1$  and  $v_2$ .

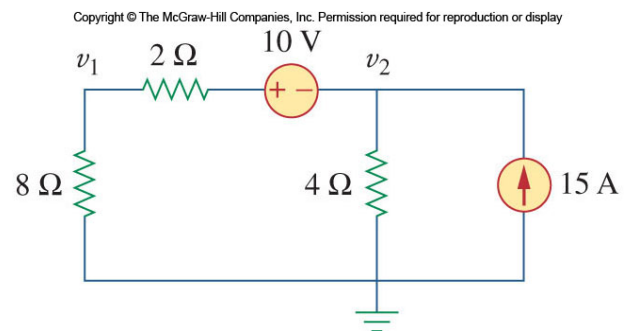


Fig 5

6) For the circuit in Fig 6, obtain the mesh equation at: (No need to solve for variables)

Hint: Assume the voltage across the 4A current source is  $v$

- i) Mesh 1 with final form:  $a_1 \cdot i_1 + a_2 \cdot i_2 + a_3 \cdot i_3 = 8 - v$
- ii) Mesh 2 with final form:  $c_1 \cdot i_1 + c_2 \cdot i_2 + c_3 \cdot i_3 = -v$
- iii) Mesh 3 with final form:  $b_1 \cdot i_1 + b_2 \cdot i_2 + b_3 \cdot i_3 = 0$

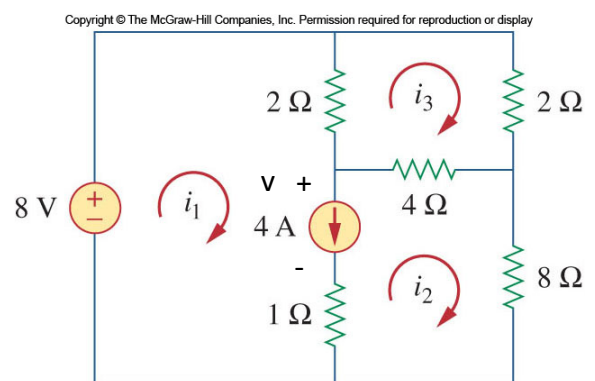


Fig 6