ELL 101: INTRODUCTION TO ELECTRICAL ENGINEERING

Tutorial Problem Set 2

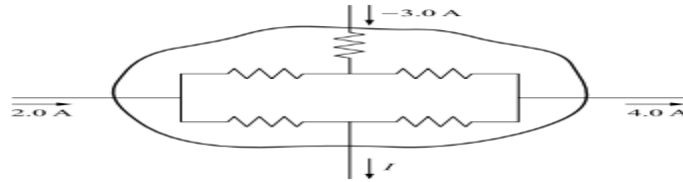1. Find the current I for the circuit shown in figure 1

Fig. 1

2. Use branch currents in the network shown in Fig. 2 to find the current supplied by the 60-V source.
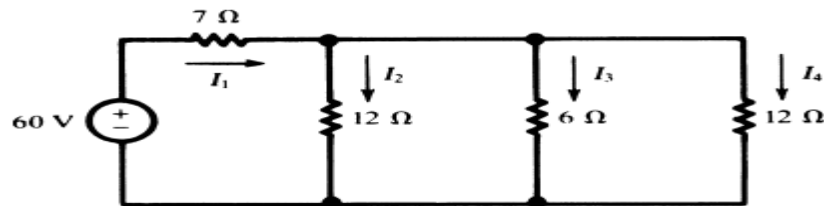

Fig. 2

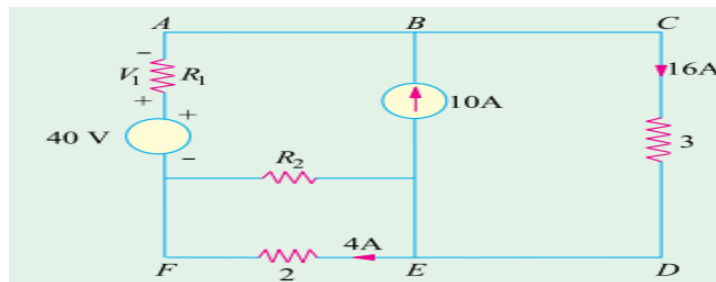3. Find the unknown voltage V_1 in the circuit of Fig. 3.

Fig. 3

4. What is the voltage V_S across the open switch in the circuit of the given figure?
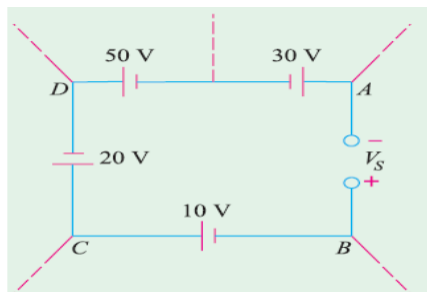

Fig. 4

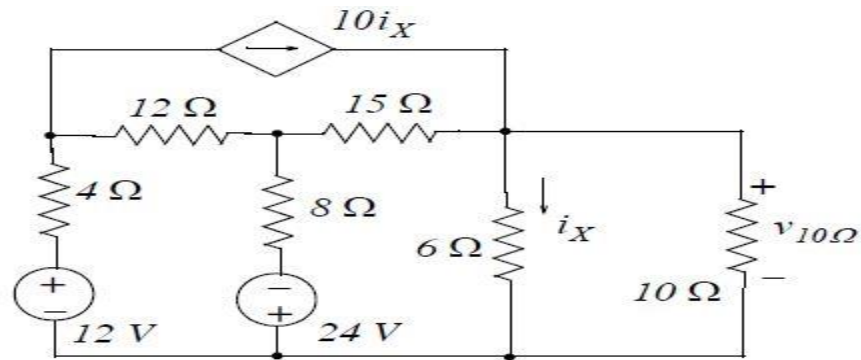5. Find the value of unknown voltage in the given circuit

Fig. 5

6. Determine the voltage labeled v in the circuit of the figure shown below.
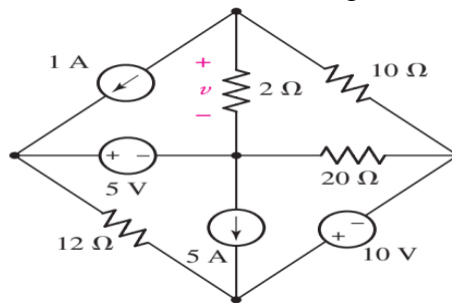

Fig. 6

7. For the circuit shown in the following figure, determine the value of the voltage labelled v_1 and the current labeled i_1.
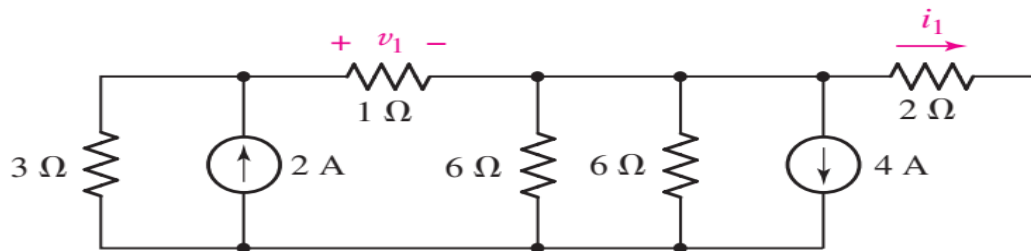

Fig. 7

8. Determine the voltage v as labeled in the following figure, and calculate the power supplied by each current source.
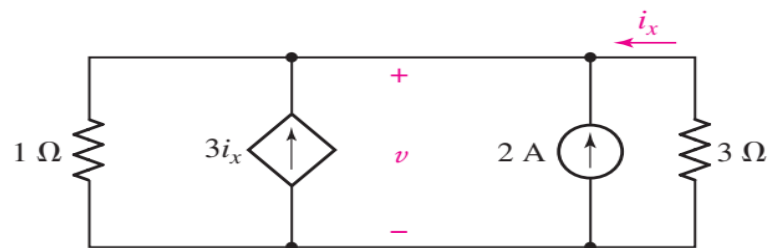

Fig. 8

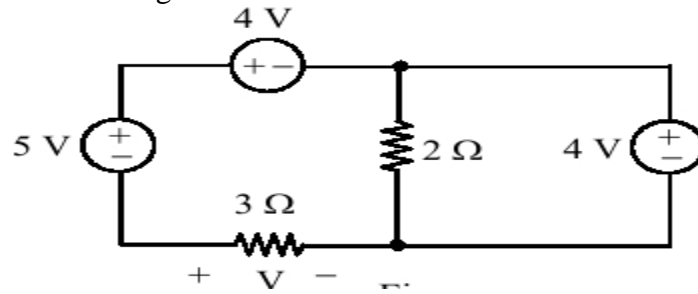9. The voltage V shown in the figure below is:

Fig. 9

10. The circuit shown in Fig. 14 is a voltage divider, also called an attenuator. When it is a single resistor with an adjustable tap, it is called a potentiometer, or pot. To discover the effect of loading, which is caused by the resistance R of the voltmeter VM, calculate the ratio V_{out}/V_{in} for (a) R = ∞, (b) 1 MΩ, (c) 10 kΩ, and (d) 1 kΩ.

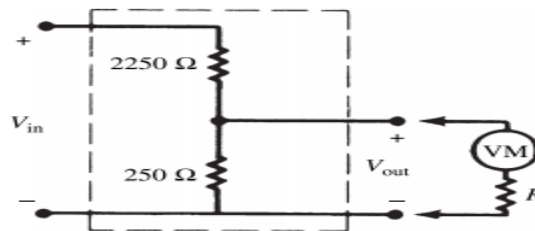

Fig. 10

11. Find the value of V in the given circuit

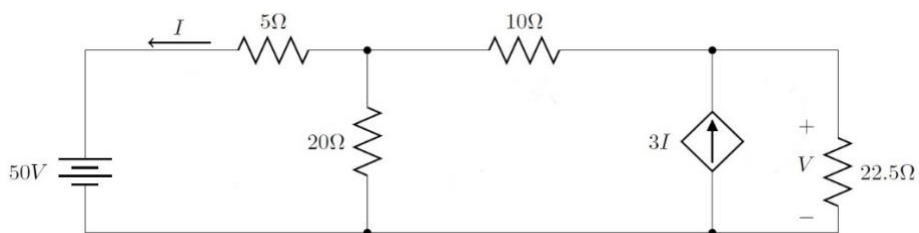Fig. 11

12. Find the value of I_1 in the given circuit

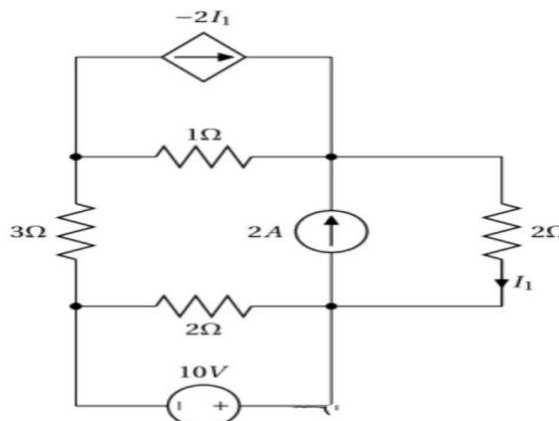Fig. 12

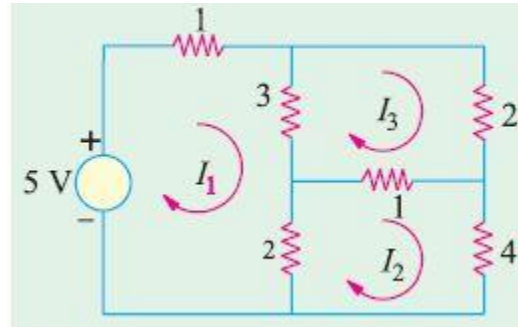13. Find the value of current I_1, I_2, I_3.

Fig. 13

14. Determine numerical values for each of the three mesh currents as labeled in the circuit diagram of following figure
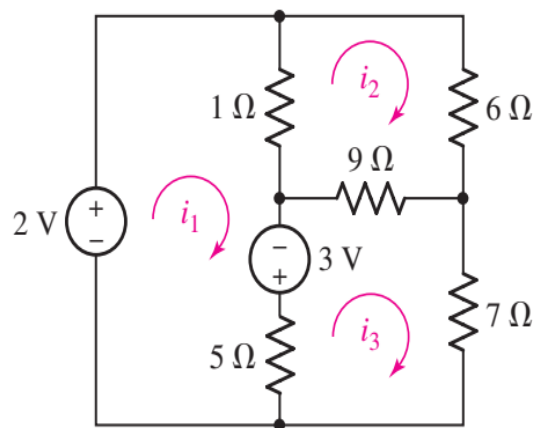

Fig. 14

15. For the circuit of following figure, determine the mesh current i_1 and the power dissipated by the 1 Ω resistor.
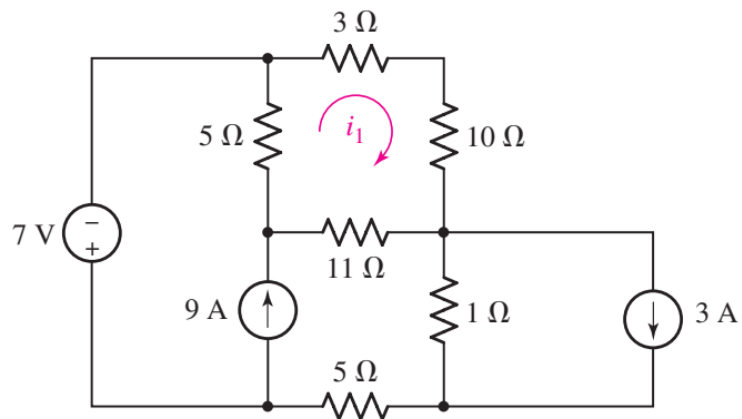

Fig. 15

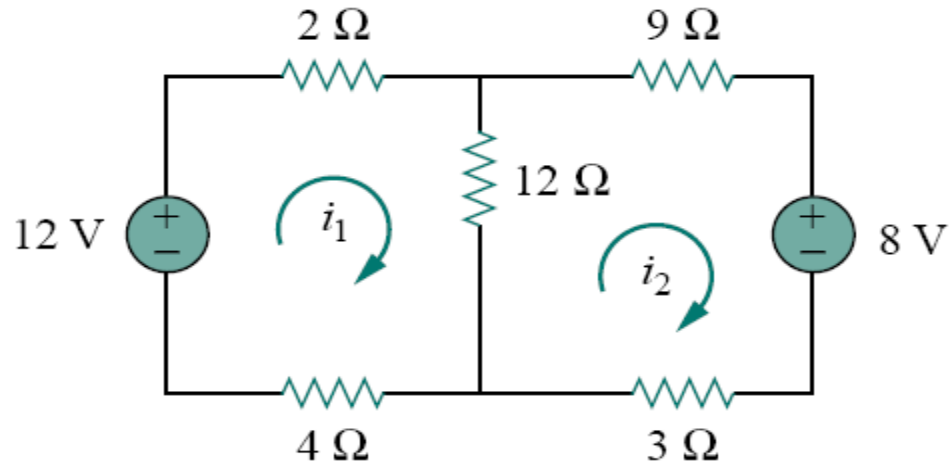16. Calculate the mesh currents i_1 and i_2 for the circuit shown in the figure below:

Fig. 16

17. For the circuit shown in Fig.17, find the branch currents I_1, I_2 and I_3 using mesh analysis.
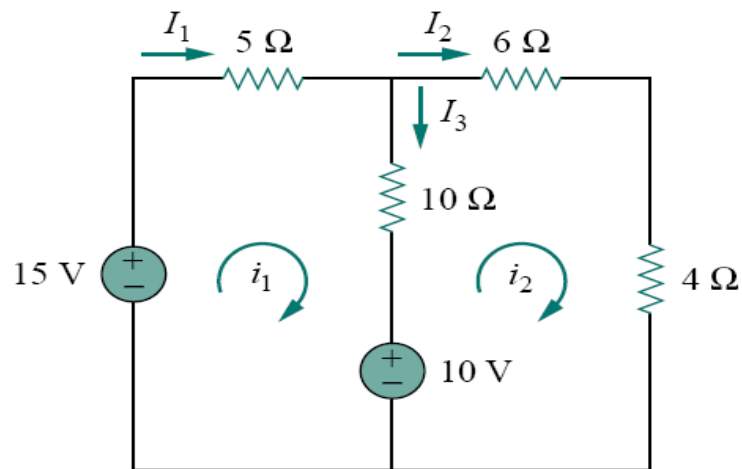

Fig. 17

18. Find the voltage V_{ab} in the network shown in Fig. 18.
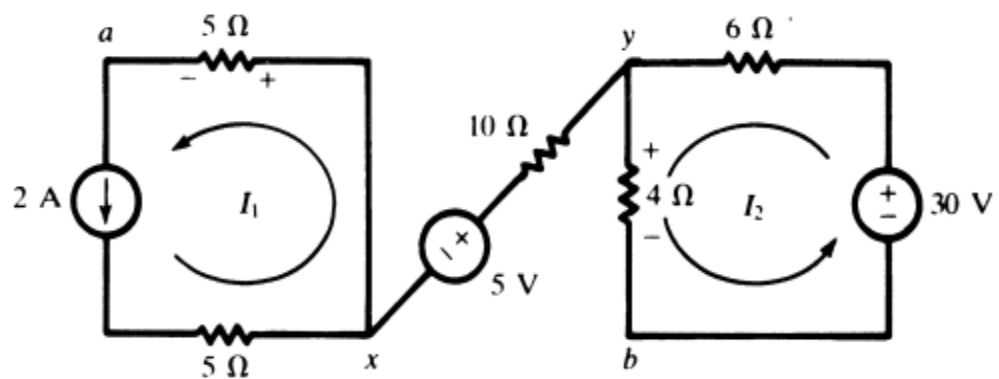

Fig. 18

19. Obtain the total power supplied by the 60-V source and the power absorbed in each resistor in the network.
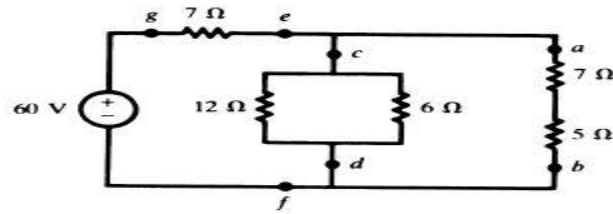

Fig. 19

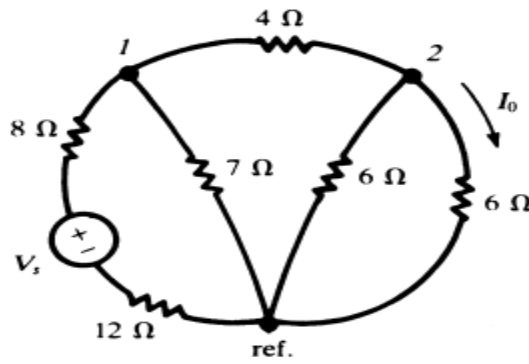20. For the network shown in Fig. 20, find V_s which makes $I_0 = 7.5$ mA.

Fig. 20