ET Tutorial Sheet 1

1. Use mesh analysis to find i_x in the circuit shown in Fig. 1. [Ans: 3.71A]

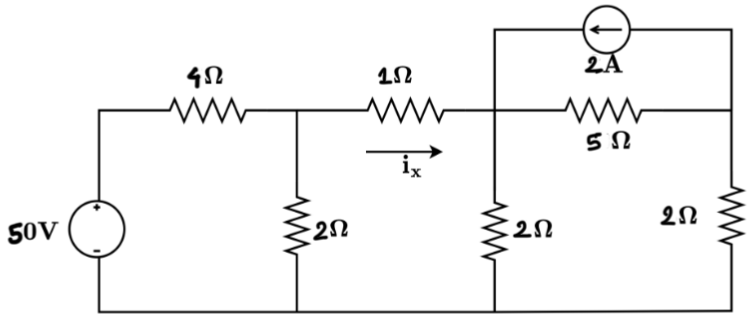


Fig. 1

2. Determine the amount of power delivered/received by the voltage source and the current source in the circuit of Fig. 2. [P_{3V}= 1.5 W, P_{2A}= 17 W]

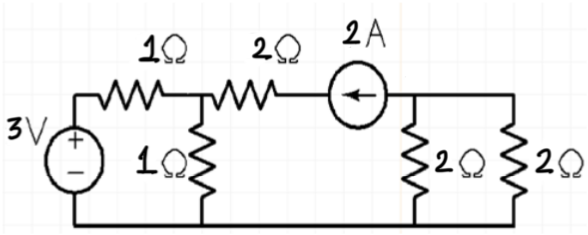


Fig. 2

3. Determine the voltage V_x in the circuit shown in Fig. 3 using node analysis. [Ans: V_x= 4V]

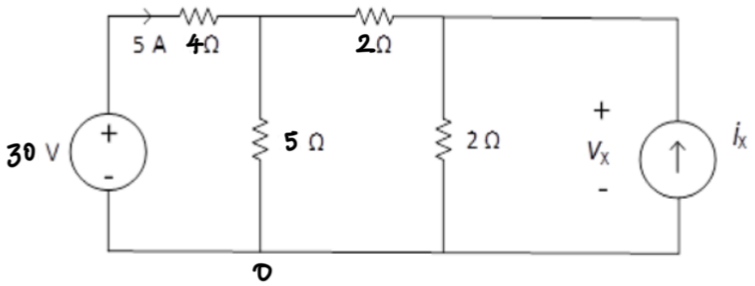


Fig. 3

4. Calculate the value of I1 of Fig. 4 using (a) Mesh Analysis and (b) Node Analysis. [Ans: i1=0.329 A]

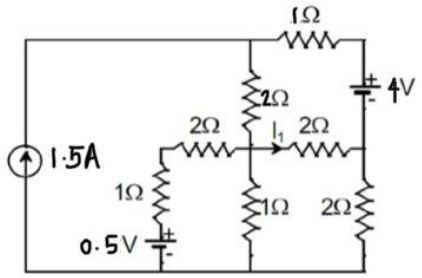


Fig. 4

5 . Use superposition theorem to find the value of Vx in the circuit shown in Fig. 5. [Ans: 11.666 V]

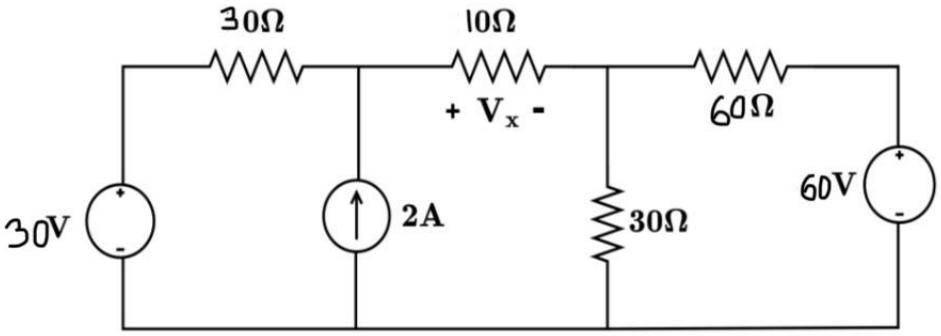


Fig. 5

6. In the circuit of Fig. 6, use Norton theorem to evaluate Vx. [Ans: 114 V]

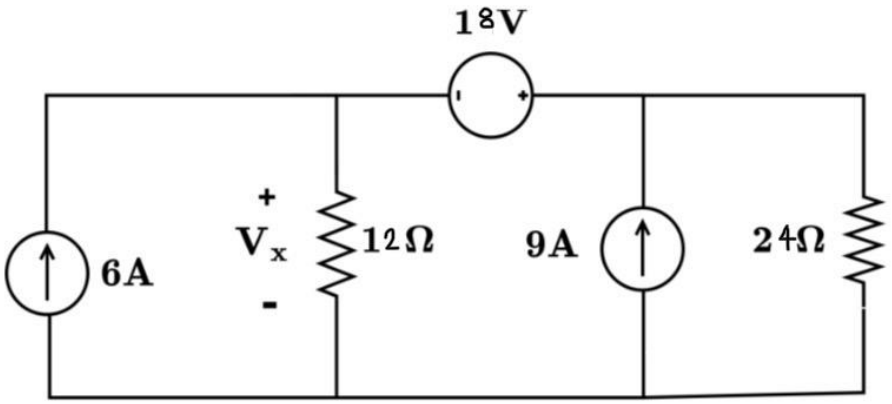


Fig. 6

7. Find the Thevenin equivalent voltage as viewed by the resistance R in the circuit shown in Fig. 7. Find the value of R for maximum power dissipation in it.

[Ans: R_{th}=15 Ω, V_{th}=45V, R=15 Ω]

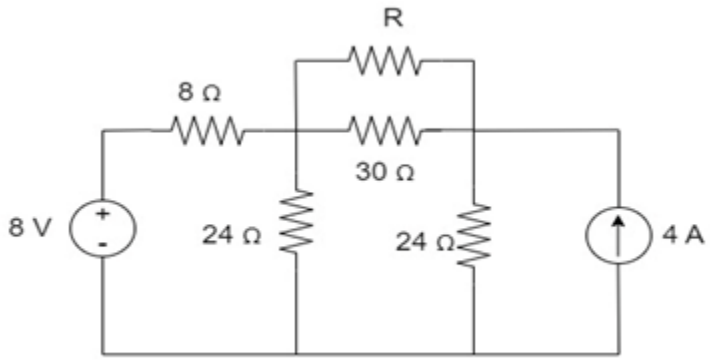


Fig.7

8. In the circuit shown in Fig. 8, find current i_x using (a) mesh analysis, (b) Thevenin theorem. [Ans:-1.43 A]

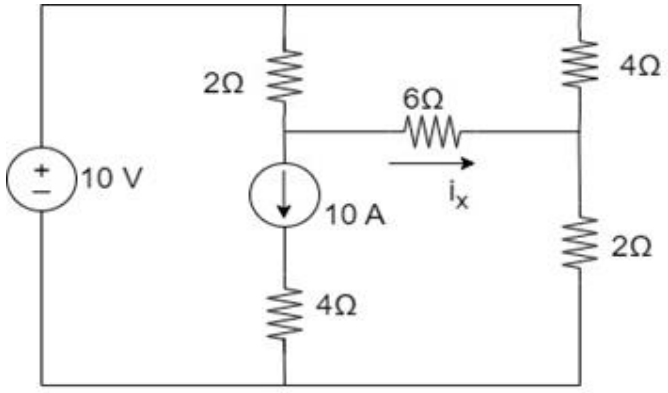


Fig.8

9. In the circuit shown in Fig. 9, what is the maximum power that could be dissipated in R_L? [Ans: 21.77 W]

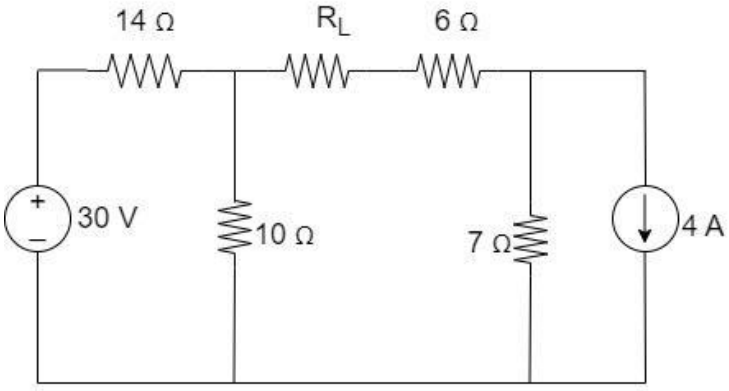
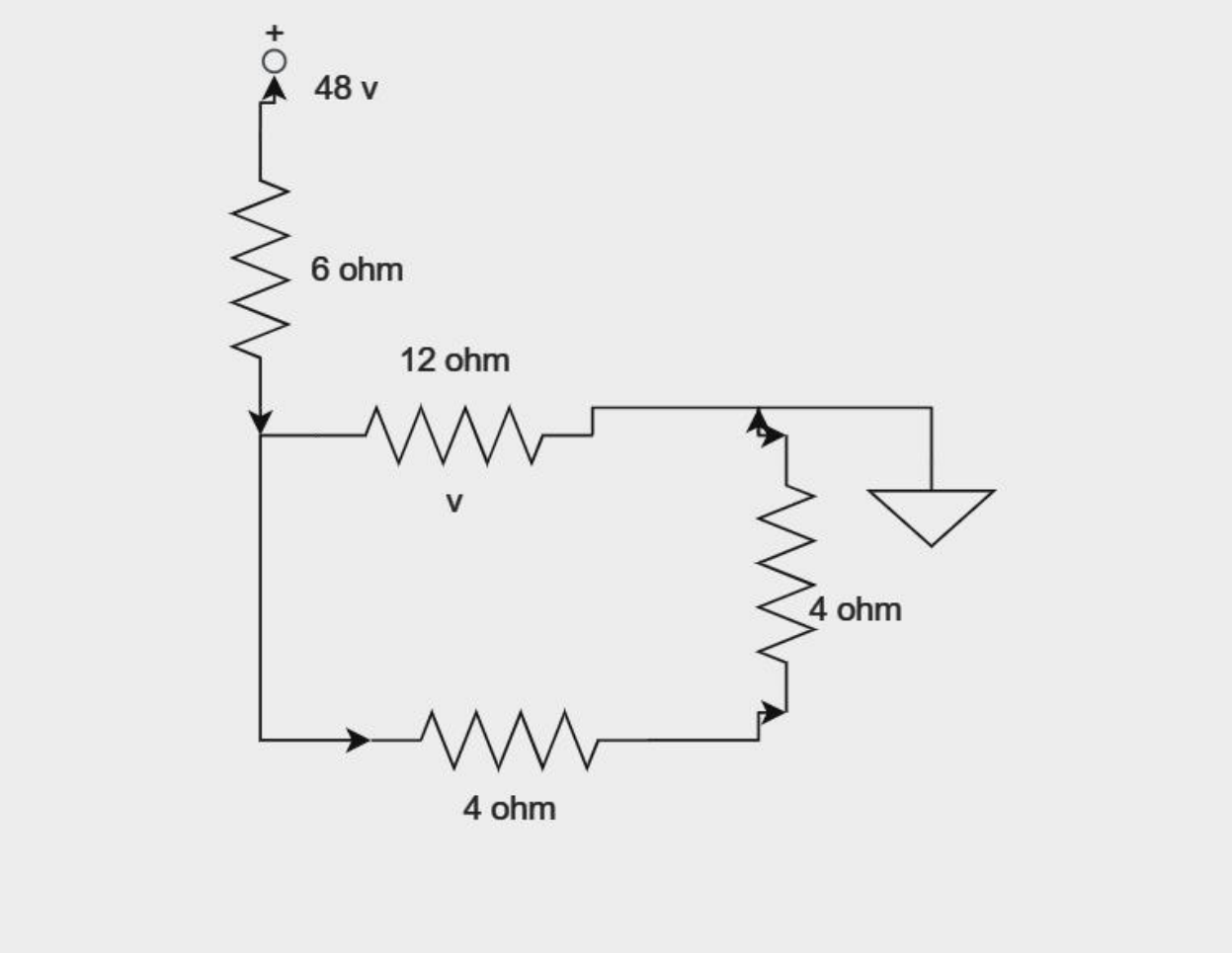
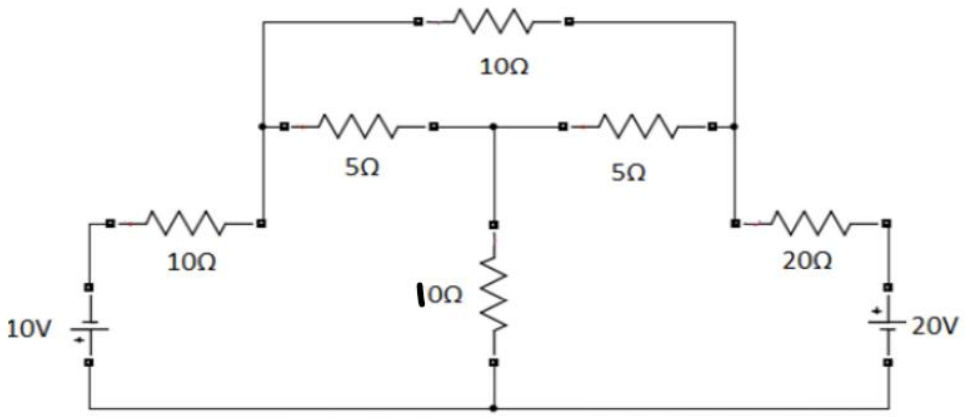


Fig.9

10. Find the value of Vth and Rth between the open terminals A and B of the circuit shown in Fig. 10 [Vth=32V, Rth=8Ω]



11. In the circuit shown in Figure 11, find the power delivered by 10 V source using Node Analysis[ans:11.27w]



12. In the network shown in Fig. 12, calculate the equivalent resistance:

a) between ‘A’ and ‘B’ [Rth=4.9468Ω]

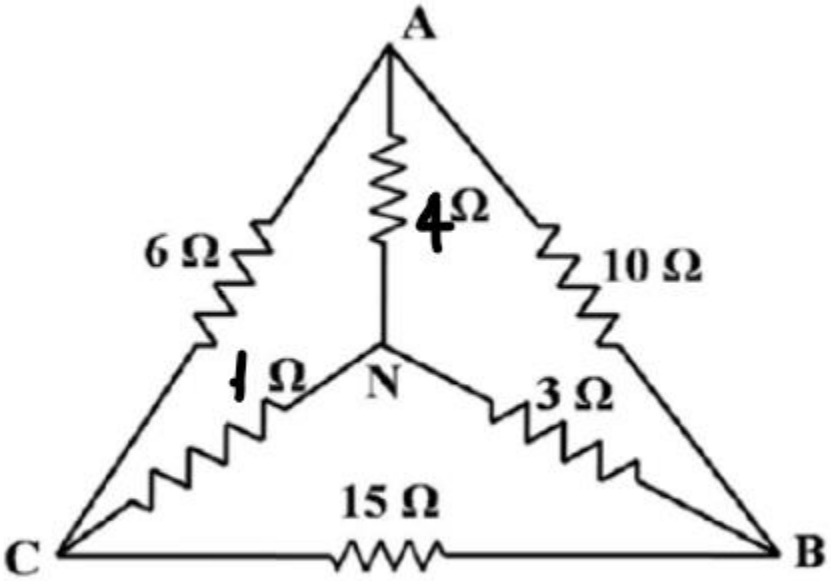


Fig. 12

b) between ‘A’ and ‘N’. [Rth=4.541Ω]