Important Remarks

- Homework is due on February 6 at the beginning of class.

1. Problem 2.23

2. Problem 2.25

3. Problem 2.28

4. Problem 2.29

The circuit shown in Fig. P2.22 is identical to the circuit given in Problem 2.20. Use a Δ-Y transformation on the 2-S, 3-S, and 5-S conductances, and then combine elements in series and parallel to determine $G = i/v$.
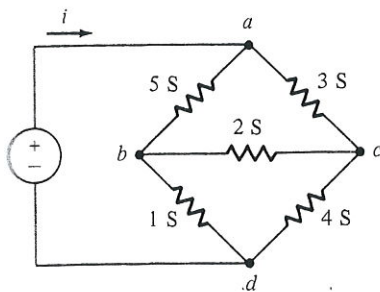

Fig. P2.22

2.23 For the circuit shown in Fig. P2.23, use mesh analysis to find (a) the current, directed down, through the 3-V source, (b) the current, directed to the right, through the 9-V source, and (c) v.
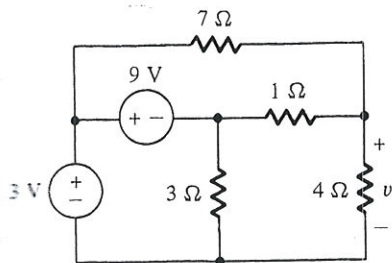

Fig. P2.23

2.24 For the circuit shown in Fig. P2.24, use mesh analysis to find (a) the current, directed to the right, through the 12-V source and (b) the current, directed down, through the 6-V source.
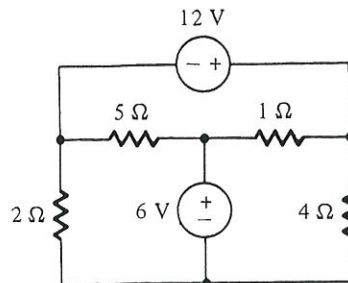

Fig. P2.24

2.25 For the circuit shown in Fig. P2.25, use mesh analysis to find (a) the resistance seen by the voltage source and (b) v.
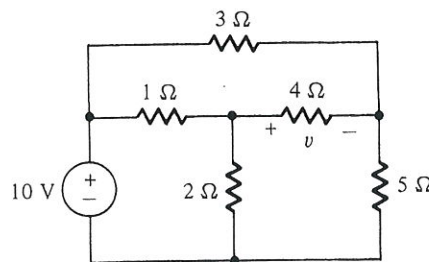

Fig. P2.25

2.26 For the circuit given in Fig. P2.25, change the 5-Ω resistor to 6 Ω and repeat Problem 2.25.

2.27 Use mesh analysis to find the resistance seen by the current source for the circuit shown in Fig. P2.27.
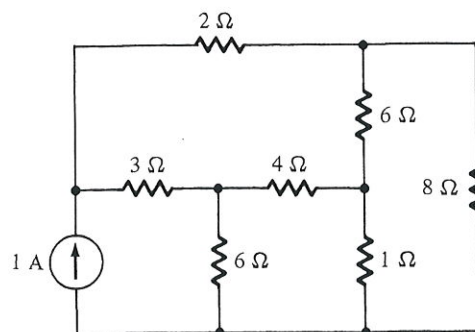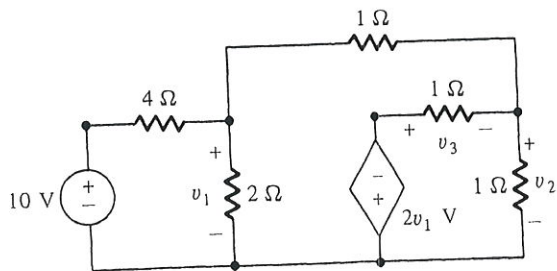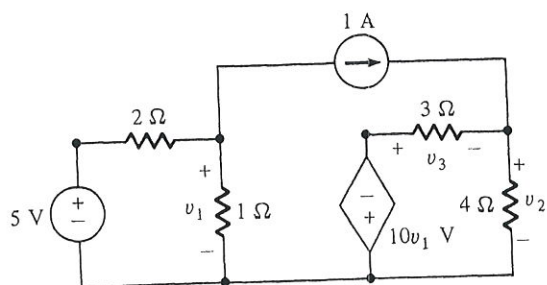

Fig. P2.27

Fig. P2.28

Fig. P2.29

2.28 Use mesh analysis to find v_1, v_2, and v_3 for the circuit shown in Fig. P2.28.

2.29 Repeat Problem 2.28 for the circuit shown in Fig. P2.29.

2.30 Repeat Problem 2.28 for the circuit shown in Fig. P2.6.

2.31 Repeat Problem 2.28 for the circuit shown in Fig. P2.5.

2.32 Find the resistance seen by the 1-A current source for the circuit shown in Fig. P2.32.

2.33 For the circuit given in Fig. P2.32, change the 5-Ω resistor to 3 Ω and repeat Problem 2.32.
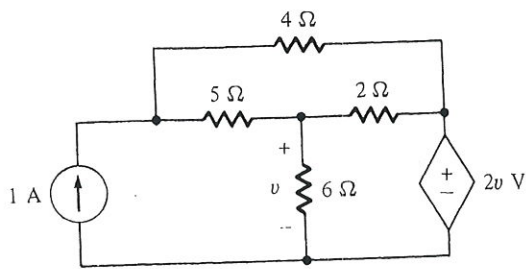
2.34 Find the resistance seen by the 1-V voltage source for the circuit shown in Fig. P2.34.

2.35 For the circuit given in Fig. P2.34, change the 10-Ω resistor to 8 Ω and repeat Problem 2.34.

2.36 The simple transistor amplifier in Fig. P2.36 incorporates an alternative h-parameter model of a transistor. Use mesh analysis to find (a) the voltage gain v_2/v_1 and (b) the resistance $R_{eq} = v_1/i_1$.

2.37 For the transistor amplifier circuit in Fig. P2.37, use mesh analysis to find (a) the voltage gain v_2/v_1 and (b) the resistance $R_{eq} = v_1/i_e$.

2.38 For the transistor amplifier circuit shown in Fig. P2.38, use mesh analysis to find (a) the voltage gain v_2/v_1 and (b) the resistance $R_{eq} = v_1/i_b$.

2.39 For the circuit shown in Fig. P2.39, find the loop currents for the tree corresponding to the 1-Ω, 2-Ω, 3-Ω, and 4-Ω resistors. Determine the resistance seen by the 3-V source.
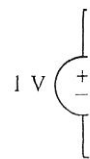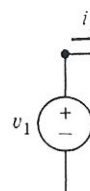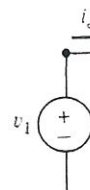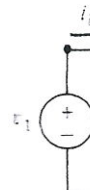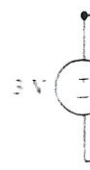

Fig. P2.32

Fig. P2

Fig. P2.

Fig. P2.:

Fig. P2.3

Fig. P2 3