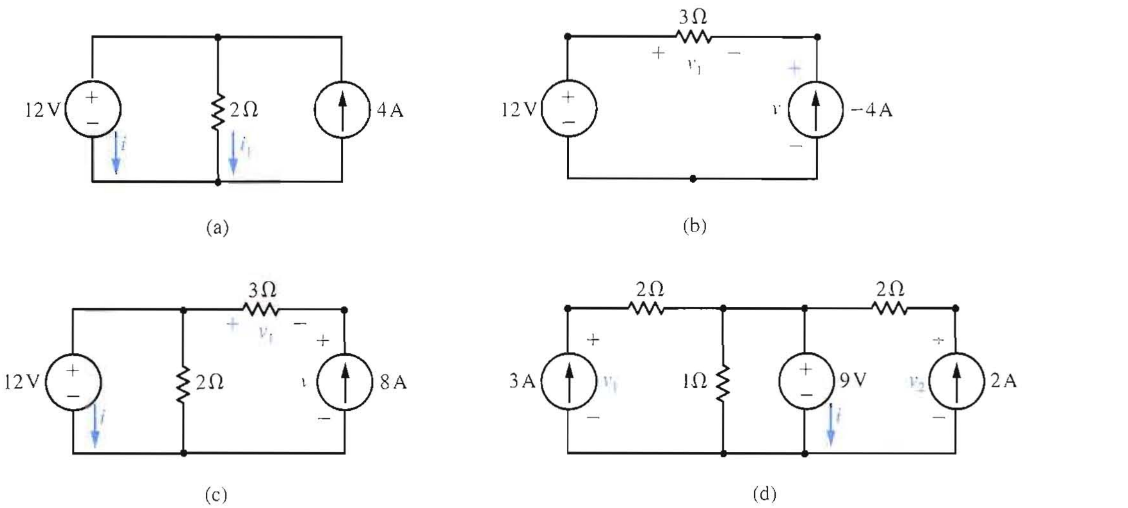

Fig. P1.26 *a-d*

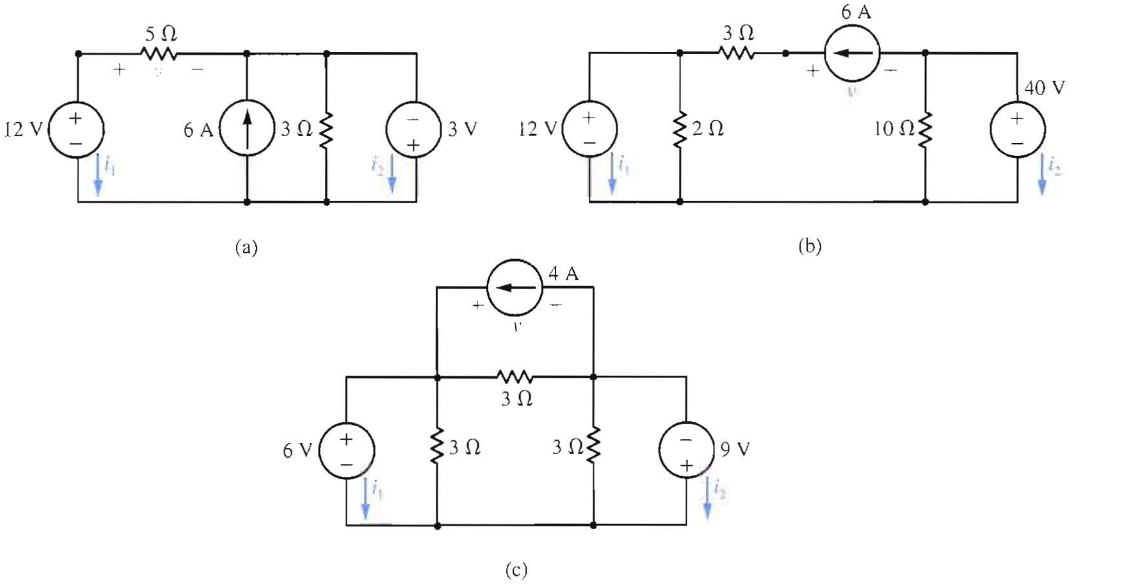

Fig. P1.27 *a-c*

1.30 Find v and i for the series-parallel circuit shown in Fig. P1.30.

1.31 Find v and i for the series-parallel circuit shown in Fig. P1.31.

1.32 Consider the circuit shown in Fig. P1.32. (a) Find i, v_1, v_2, and v_3. (b) Remove the short circuit between a and b (erase it), and find i, v_1, and v_2. (Don't try to find v_3—it can't be done!)

1.33 Consider the series-parallel circuit shown in Fig. P1.33. (a) Find V_s when $v_1 = 2$ V. (b) Find V_s when $i_3 = 3$ A. (c) Find V_s when $i_5 = 4$ A. (d) What is the resistance $R_{eq} = V_s/i$ loading the battery for part (a)? For part (b)? For part (c)?

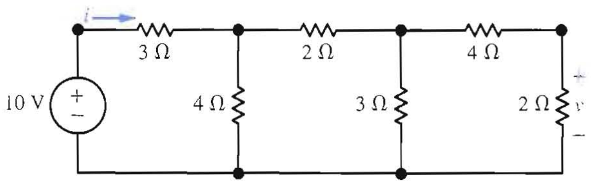

Fig. P1.30

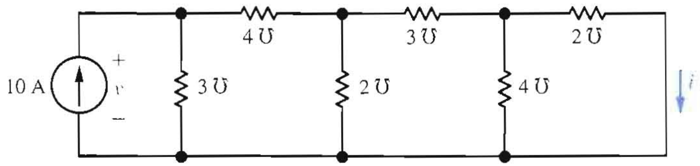

Fig. P1.31

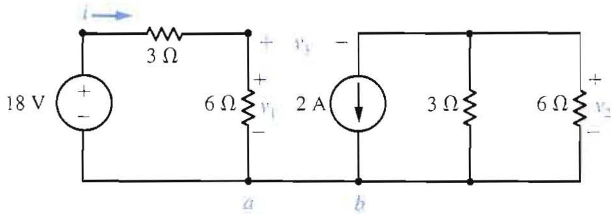

Fig. P1.32

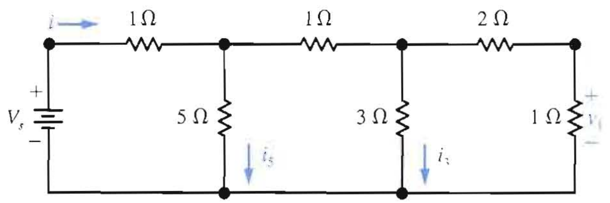

Fig. P1.33

1.34 Consider the nonseries-parallel circuit shown in Fig. P1.34. (a) When $R = \frac{1}{2}\ \Omega$, then $v_1 = 6$ V. Determine the resistance $R_{eq} = V_s/i$ loading the battery.

1.35 Consider the nonseries-parallel circuit shown in Fig. P1.34. When $R = 4\ \Omega$, then $v_1 = 4$ V. Determine the resistance $R_{eq} = V_s/i$ loading the battery.

1.36 Consider the nonseries-parallel circuit shown in Fig. P1.34. Determine R and the resistance $R_{eq} = V_s/i$ loading the battery when $v_1 = 3$ V.

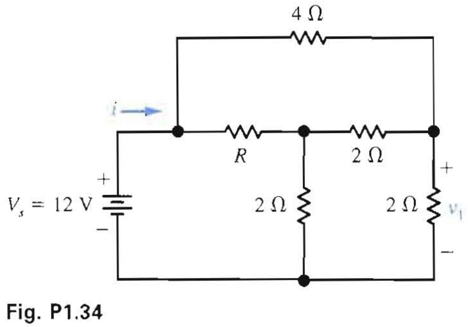

Fig. P1.34

1.44 Consider the circuit shown in Fig. P1.44. Find v when (a) $K = 2$, and (b) $K = 4$.

1.45 Consider the circuit shown in Fig. P1.45. Find i when (a) $K = 2$, and (b) $K = 4$.

1.46 Consider the circuit shown in Fig. P1.46. (a) Find the resistance $R_{eq} = v_1/i_1$. (b) Find the voltage v_2 in terms of the applied voltage v_1.

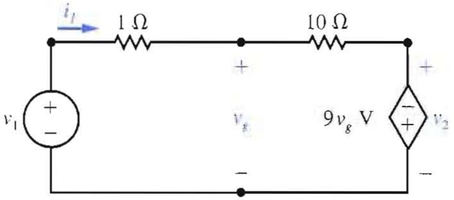

Fig. P1.46

1.47 Consider the circuit shown in Fig. P1.47. (a) Find the resistance $R_{eq} = v_1/i_1$. (b) Use voltage division to find v in terms of v_g. (c) Find the voltage v_2 in terms of the applied voltage v_1.

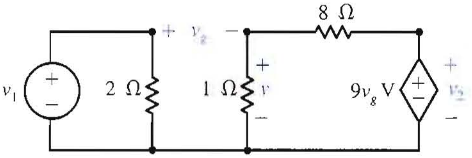

Fig. P1.47

1.48 For the circuit shown in Fig. P1.48, suppose that $R = 10\ \Omega$. Determine (a) v_s, and (b) $R_{eq} = v_s/i_s$.

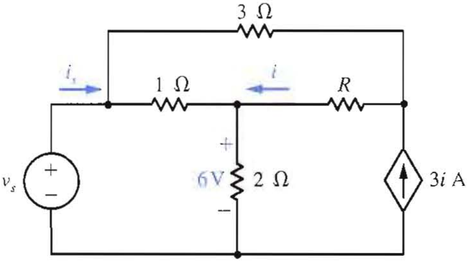

Fig. P1.48

1.49 For the circuit shown in Fig. P1.48, suppose that $R = 8\ \Omega$. Determine (a) v_s, and (b) $R_{eq} = v_s/i_s$.

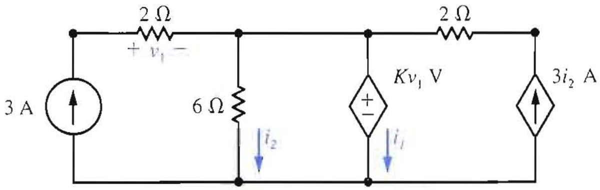

Fig. P1.43

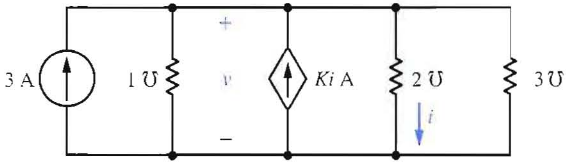

Fig. P1.44

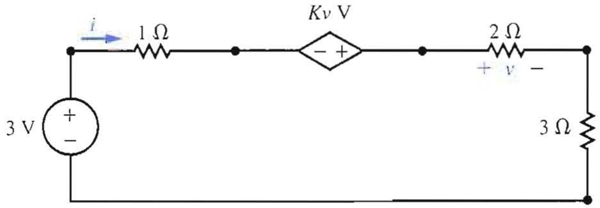

Fig. P1.45

1.50 For the circuit shown in Fig. P1.50, suppose that $R = 5\ \Omega$. Determine (a) i_s, and (b) $R = v_s/i_s$.

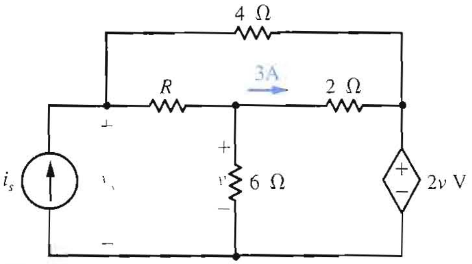

Fig. P1.50

1.51 For the circuit shown in Fig. P1.50, suppose that $R = 3\ \Omega$. Determine (a) i_s, and (b) $R_{eq} = v_s/i_s$.

1.52 The circuit shown in Fig. P1.52 is a single field-effect transistor (FET) amplifier in which the input is v_1 and the output is v_2. The portion of the circuit in the shaded box is an approximate model of an FET. (a) Find v_{gs} in terms of v_1. (b) Find v_2 in terms of v_1. (c) Find v_2 when $v_1 = 0.1 \cos 120\pi t$ V.

1.53 The circuit shown in Fig. P1.53 is a single bipolar junction transistor (BJT) amplifier in which the input is v_1 and the output is v_2. The portion of the circuit in the shaded box is an approximate model of a BJT in the common-emitter configuration. (a) Find i_b in terms of the input voltage v_1. (b) Find the output voltage v_2 in terms of v_1. (c) Find v_2 when $v_1 = 0.1 \cos 120\pi t$ V.

1.54 The circuit shown in Fig. P1.54 is another single bipolar junction transistor (BJT) amplifier in which the input is v_1 and the output is v_2. The portion in the shaded box is an approximate model of a BJT in the common-base configuration. (a) Find i_e in terms of the input voltage v_1. (b) Find the output voltage v_2 in terms of v_1. (c) Find v_1 when $v_1 = 0.1 \cos 120\pi t$ V.

1.55 For the circuit given in Fig. 1.51 on p. 34, $v = 12$ V, $i_1 = 4$ A, and $i_2 = 6$ A. Determine the power absorbed by each element in the circuit.

1.56 For the circuit given in Fig. 1.52 on p. 36, $v = 24$ V. Determine the power absorbed by each element in the circuit.

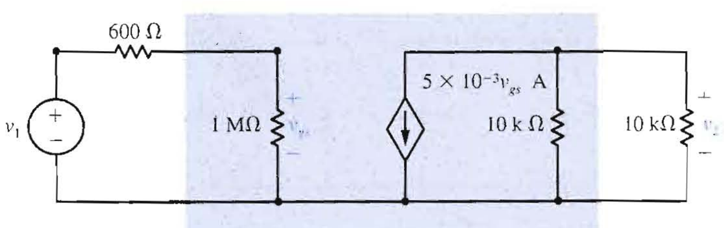

Fig. P1.52

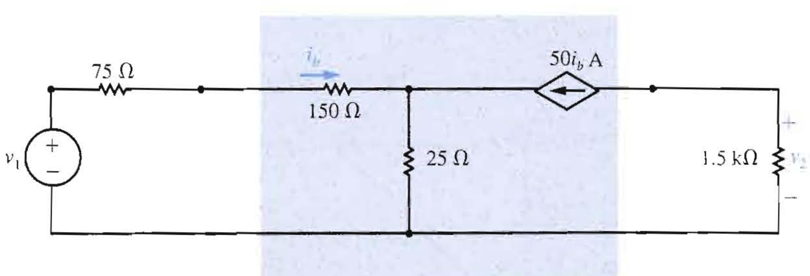

Fig. P1.53