Homework # 2

ES 332 Electrical Engineering

Problems from Textbook

Drill Exercise: 1.12

Problem 1.38
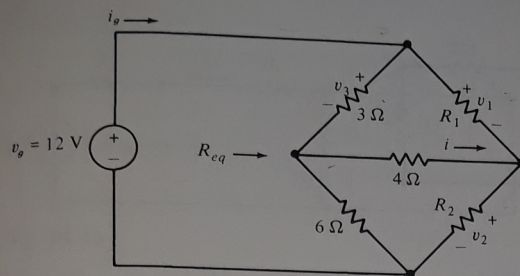
Problem 1.41

Fig. P1.38

1.38 Shown in Fig. P1.38 is a non-series-parallel connection known as a **bridge circuit**.

    (a) Given that $R_1 = 6\,\Omega$, $R_2 = 3\,\Omega$, and $v_1 = 7$ V, find v_2, i, v_3, and the resistance $R_{eq} = v_g/i_g$ seen by the voltage source.

    (b) Repeat part (a) for the case $R_1 = 3\,\Omega$, $R_2 = 6\,\Omega$, and $v_1 = 4$ V.

    (c) When the current $i = 0$, we say that the bridge is **balanced**. Under what condition (find an expression relating R_1 and R_2) will this bridge be balanced?

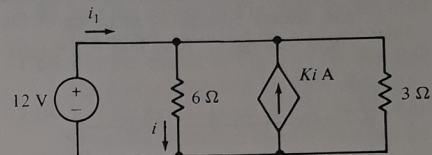**1.39** Given the circuit shown in Fig. P1.39, find i_1 for (a) $K = 2$, (b) $K = 3$, and (c) $K = 4$.

Fig. P1.39

1.40 The circuit given in Fig. P1.40 contains a **voltage-dependent voltage source** as well as a current-dependent current source. Repeat Problem 1.39 for this circuit.

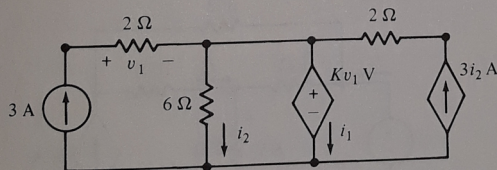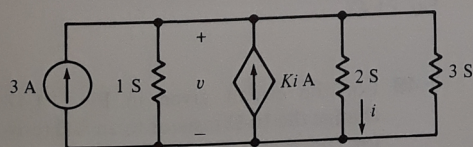**1.41** Consider the circuit shown in Fig. P1.41. Find v for (a) $K = 2$ and (b) $K = 4$.

Fig. P1.40

Fig. P1.41