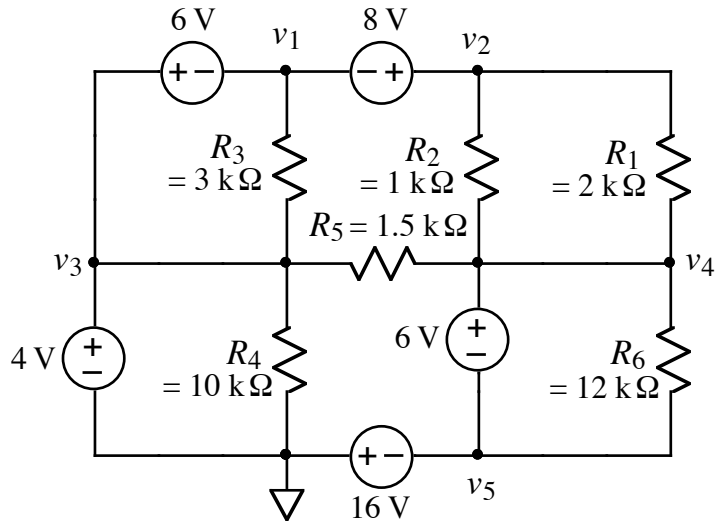


Ex:



Find the absolute voltages at all the labeled nodes in the above circuit. Hint: this may be done by inspection.

SOL'N: The node voltages are found by starting at the reference, (0 V), and stepping from node to node via voltage sources. If we enter a voltage source at the - sign and exit at the + sign, then we add the voltage of the source.

NOTE: Nodes connected by wires are really the same node and have the same voltage.

Starting from the reference and working out on the left side, we get the following successive voltages:

$$v_3 = 4 \text{ V}$$

$$v_1 = v_3 - 6 \text{ V} = 4 \text{ V} - 6 \text{ V} = -2 \text{ V}$$

$$v_2 = v_1 + 8 \text{ V} = -2 \text{ V} + 8 \text{ V} = 6 \text{ V}$$

Returning to the reference and working out on the right side, we get the remaining voltages:

$$v_5 = -16 \text{ V}$$

$$v_4 = v_5 + 6 \text{ V} = -16 \text{ V} + 6 \text{ V} = -10 \text{ V}$$