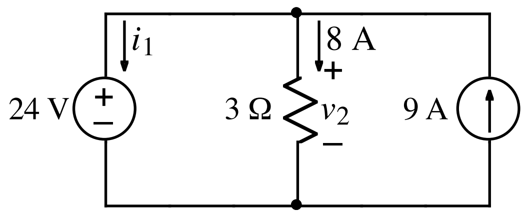
HOMEWORK #2 solution

Ex:



Use Kirchhoff's laws to find the value of i_1 and v_2.

SOL'N: A voltage loop on the left side yields the value of v_2:

$$24 \text{ V} - v_2 = 0 \text{ V} \Rightarrow \text{v}_2 = 24 \text{ V}$$

Note that this loop proceeded in a clockwise direction, starting from the lower left. The sign of each voltage drop is determined by the + or – voltage symbol seen as the path exits a component.

A current sum at the top center node yields the value of i_1:

$$i_1 + 8 \text{ A} - 9 \text{ A} = 0 \text{ V} \Rightarrow i_1 = 1 \text{ A}$$

Note that this is the sum of the currents flowing away from the top center node.

Note also that a current sum for the bottom center node yields the same value for i_1. This follows because the three currents are actually the same three currents flowing away from the top center node (but of the opposite sign).