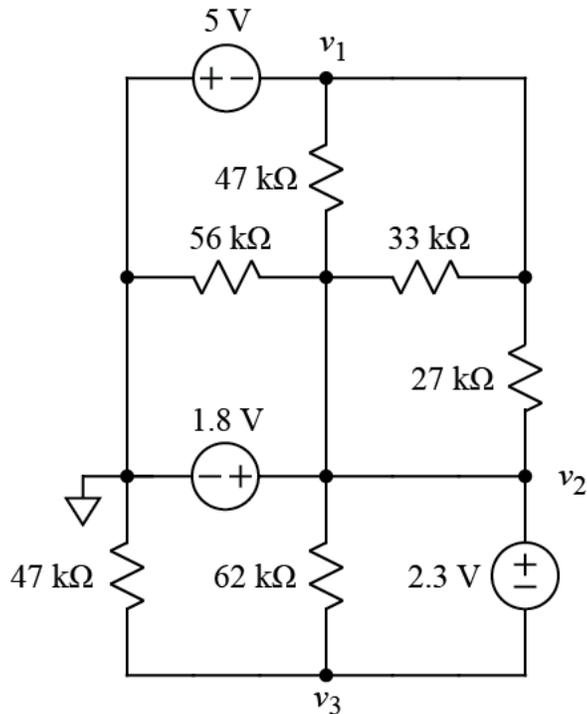


Ex:



Find the node voltages at all the labeled nodes in the above circuit.

SOL'N: Note that nodes connected by wires are really a single node. (They could be pulled together into a single point.)

The idea of node voltages is that the $-$ sign of each node voltage is located at the reference (triangle symbol), which is similar to how sea-level is defined as zero altitude. The node voltage itself is where the $+$ sign of the voltage drop is placed.

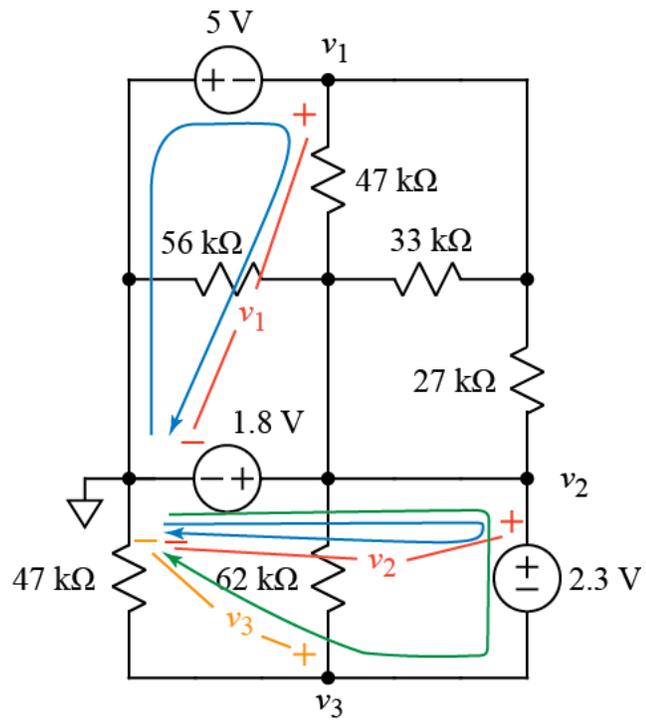
This means that we can use node voltages to complete voltage-loops. Consider the v -loops shown in the figure below.

$$-5\text{V} - v_1 = 0\text{V}$$

$$1.8\text{V} - v_2 = 0\text{V}$$

$$1.8\text{V} - 2.3\text{V} - v_3 = 0\text{V}$$

What we see is that the voltage sources connecting nodes make it easy to determine node voltages.



$$v_1 = -5 \text{ V}$$

$$v_2 = 1.8 \text{ V}$$

$$v_3 = -0.5 \text{ V}$$