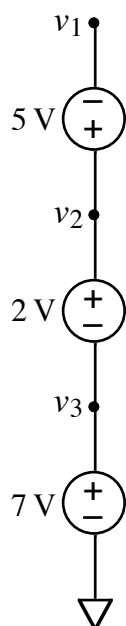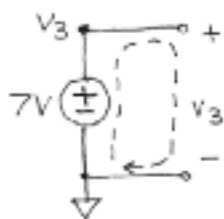**Ex:**

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

Sol'n: We may imagine v-loops in which we measure across gaps. For the 7V source, for example, we have the following view:

For the above v-loop, we have the following eg'n:

$$+7V - V_3 = 0V \quad \text{or} \quad V_3 = 7V$$

Thus, the value of V_3 is 7V higher than the reference voltage of 0V.

Each source adds its value to the
node below it. If the voltage source
is reversed (plus on the bottom) we
subtract its value from the node below.

$$V_2 = V_3 + 2V = 7V + 2V = 9V$$

$$V_1 = V_2 - 5V = 9V - 5V = 4V$$