The Node-Voltage Circuit Analysis Method

Step 1 – Identify all essential nodes in the circuit (where three or more elements are connected).

Step 2 – Choose one node as a reference node (usually the one with the most elements connected). Label that node with a ⬇ and treat the voltage at that point as zero. (Ground)

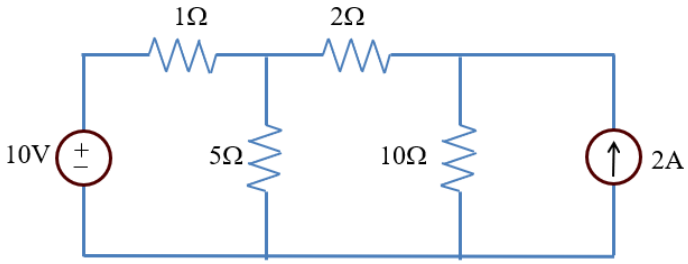
Step 3 – Label unknown voltages at all other essential nodes: V_1, V_2, . . . etc.

Step 4 – Identify currents entering/leaving essential nodes in terms of V_1, V_2, …

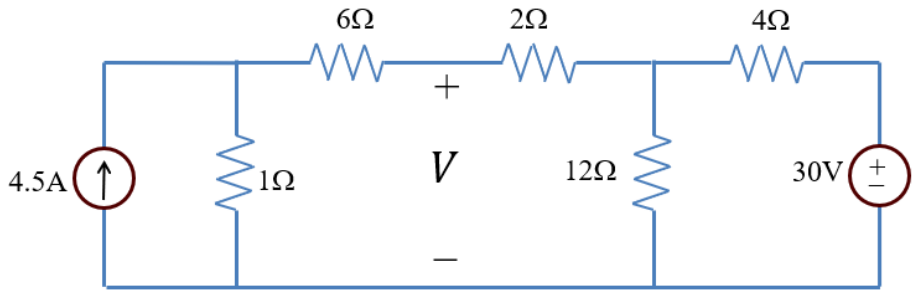
Step 5 – Use KCL at each essential node to set up equations to solve for the unknown voltages.

Step 6 – Solve equations for unknown voltages.

Example 1



Example 2



Example 3