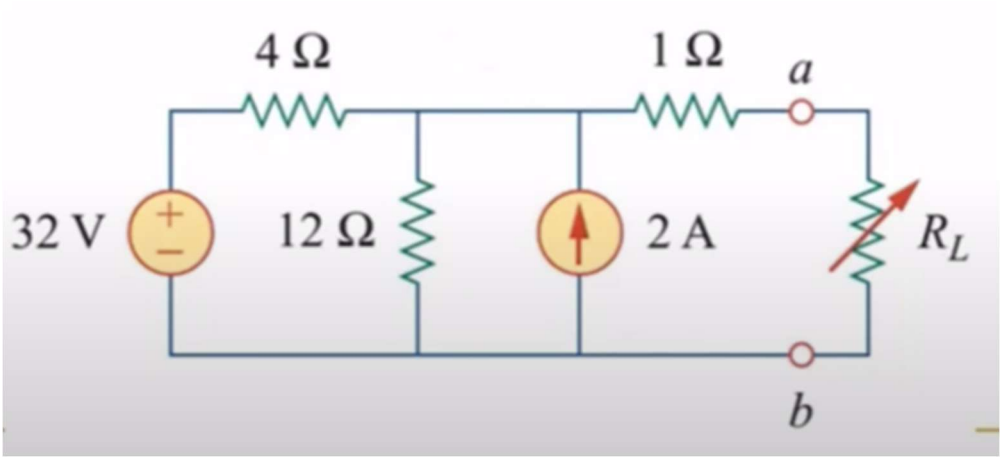
Steps to find Thevenin's equivalent circuit

1. Identify the load terminals.
2. Remove the load resistance from the circuit (if its is connected)
3. Find the equivalent resistance (R_{Th}) across the load terminal by replacing independent voltage source by short circuit and independent current source by open circuit
4. Find the open circuit voltage (V_{Th}) using any of the circuit analysis techniques (mostly mesh/node methods)
5. Draw the Thevenin's equivalent circuit

Problem:

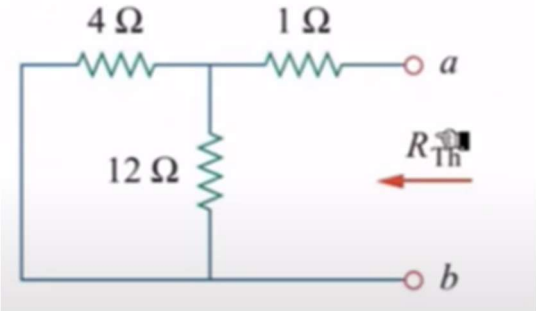


2. First Remove R_load

3.

Voltage source →short circuit

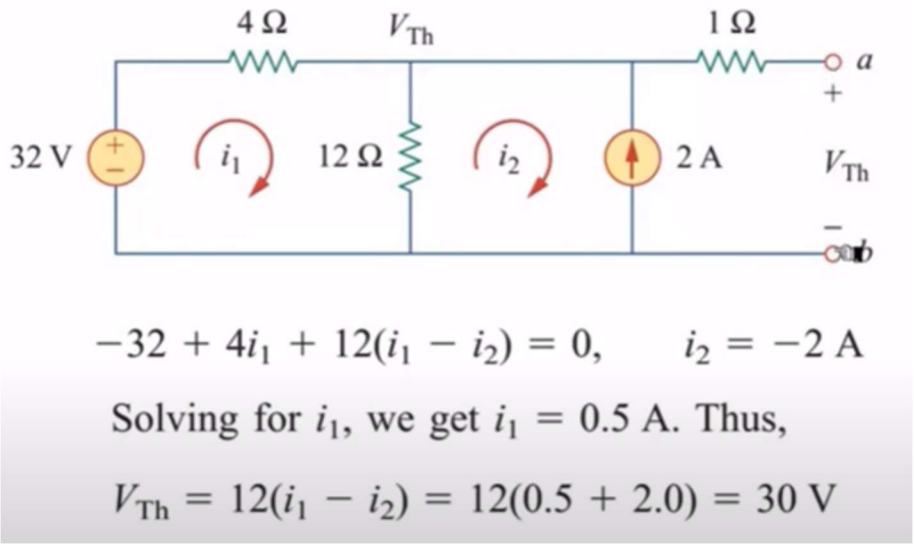
Current source → open circuit



Calculate R_th

$$R_{Th} = 4 \parallel 12 + 1 = \frac{4 \times 12}{16} + 1 = 4\ \Omega$$

4. Find Voltage V_th



$$-32 + 4i_1 + 12(i_1 - i_2) = 0, \qquad i_2 = -2\ \text{A}$$

Solving for i_1, we get $i_1 = 0.5$ A. Thus,

$$V_{Th} = 12(i_1 - i_2) = 12(0.5 + 2.0) = 30\ \text{V}$$

5. Place R_load back, and determine current: