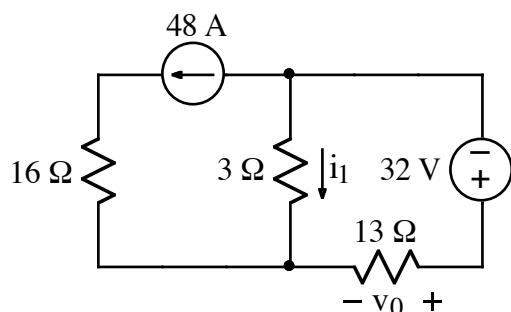


Ex:



Use the node-voltage method to find i_1 and v_0 .

Sol'n: We sum currents out of v_1 node:

$$48A + \frac{v_1 - 0V}{3\Omega} + \frac{(v_1 + 32V) - 0V}{13\Omega} = 0V$$

$$v_1 \left(\frac{1}{3\Omega} + \frac{1}{13\Omega} \right) = -48A - \frac{32V}{13\Omega}$$

Multiply both sides by 39Ω :

$$v_1 (13 + 3) = -48A \cdot 39\Omega - 32V(3)$$

$$v_1 \cdot 16 = -48(39)V - 32(3)V$$

$$v_1 = -3(39) - 2(3)$$

$$v_1 = -123V$$

$$v_0 = v_1 + 32V = -91V$$

$$i_1 = \frac{v_1}{3\Omega} = \frac{-123V}{3\Omega} = -41A$$