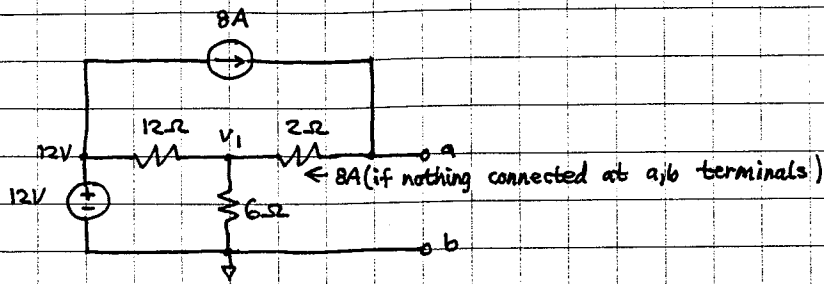


ex:



Find the Thevenin equivalent with respect to terminals a,b.
(In other words, create a circuit with a V -source and internal R that has same i and v at its terminals as above circuit has at a,b terminals.)

Use Node-V method to find V_1 , then use $V_a = V_1 + 8A \cdot 2\Omega = V_{TH}$.
(We are finding V_{TH} by calculating voltage at a,b terminals with nothing connected to a,b terminals.)

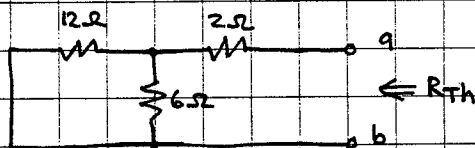
$$\text{Node } v_1, \text{ egh: } \frac{v_1 - 12V}{12\Omega} + \frac{v_1}{6\Omega} - 8A = 0A$$

$$\text{or } \frac{v_1}{12\Omega \parallel 6\Omega} = 8A + \frac{12V}{12\Omega} = 9A$$

$$\text{or } v_1 = 9A \cdot 12\Omega \parallel 6\Omega = 9A \cdot 6\Omega \left(\frac{2}{3} \right) = 54V \cdot \frac{2}{3} = 36V$$

$$V_{TH} = V_a = v_1 + 8A \cdot 2\Omega = 36V + 16V = 52V$$

To find R_{TH} we turn independent sources to zero and find R looking into a,b terminals:



$$\begin{aligned} R_{TH} &= (6\Omega \parallel 12\Omega) + 2\Omega \\ &= 6\Omega \cdot \left(\frac{1}{2} \right) + 2\Omega \\ &= 6\Omega \cdot \frac{2}{3} + 2\Omega \\ &= 6\Omega \end{aligned}$$

Thevenin equivalent:

