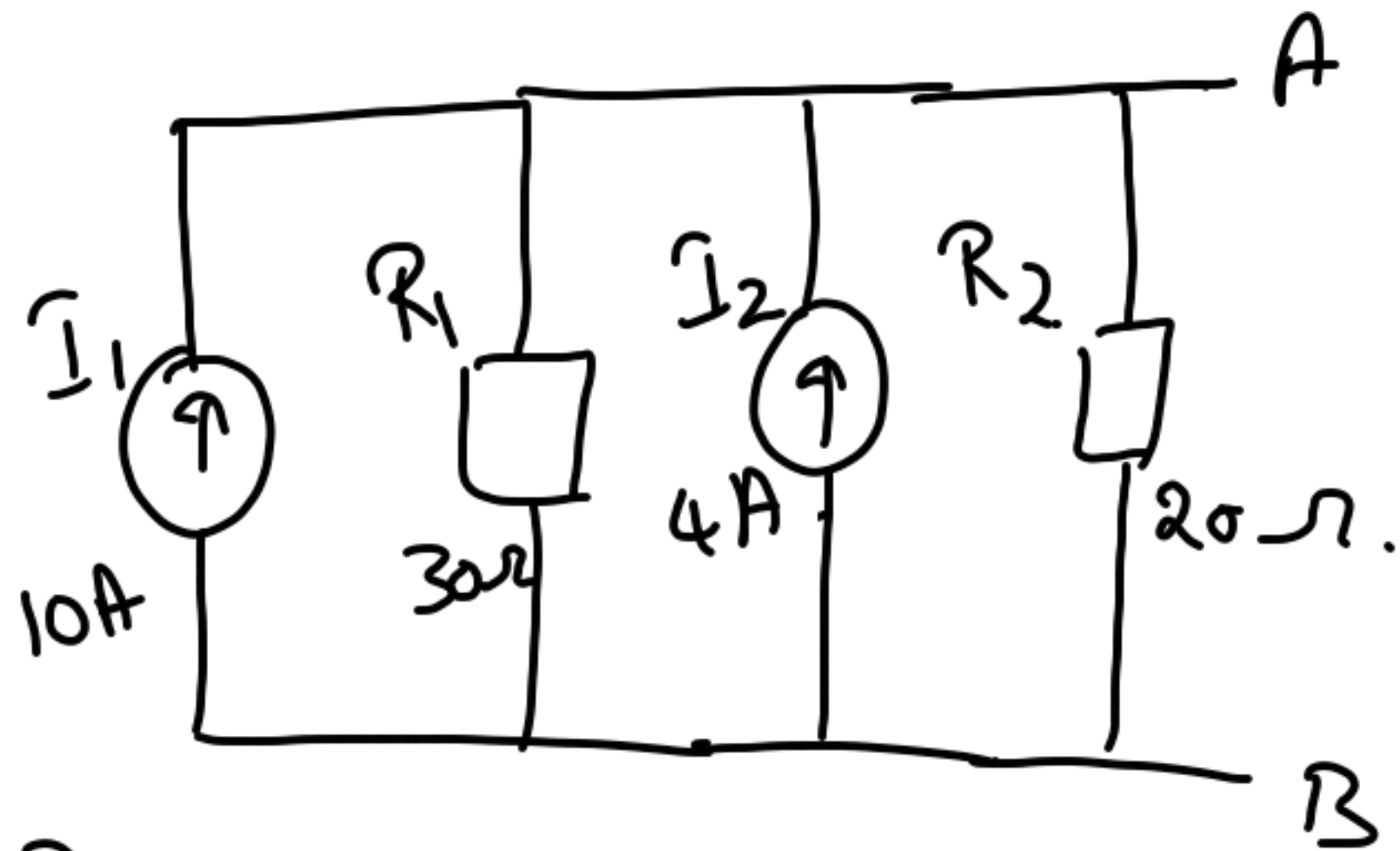


1) For the circuit shown below
Obtain a single current source
circuit.



$\hat{I}_1$ & $\hat{I}_2$ in parallel.

$$\hat{I} = \hat{I}_1 + \hat{I}_2 = 10 + 4 = 14A$$

R_1 and R_2 in parallel.

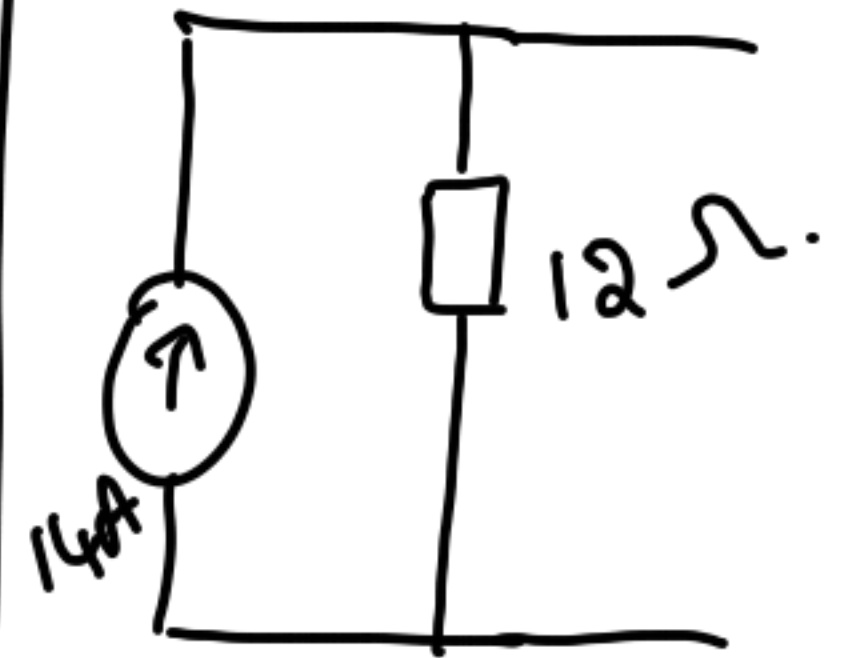
$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2}$$

$$\frac{1}{R_{eq}} = \frac{1}{30} + \frac{1}{20}$$

$$\frac{1}{R_{eq}} = 0.08$$

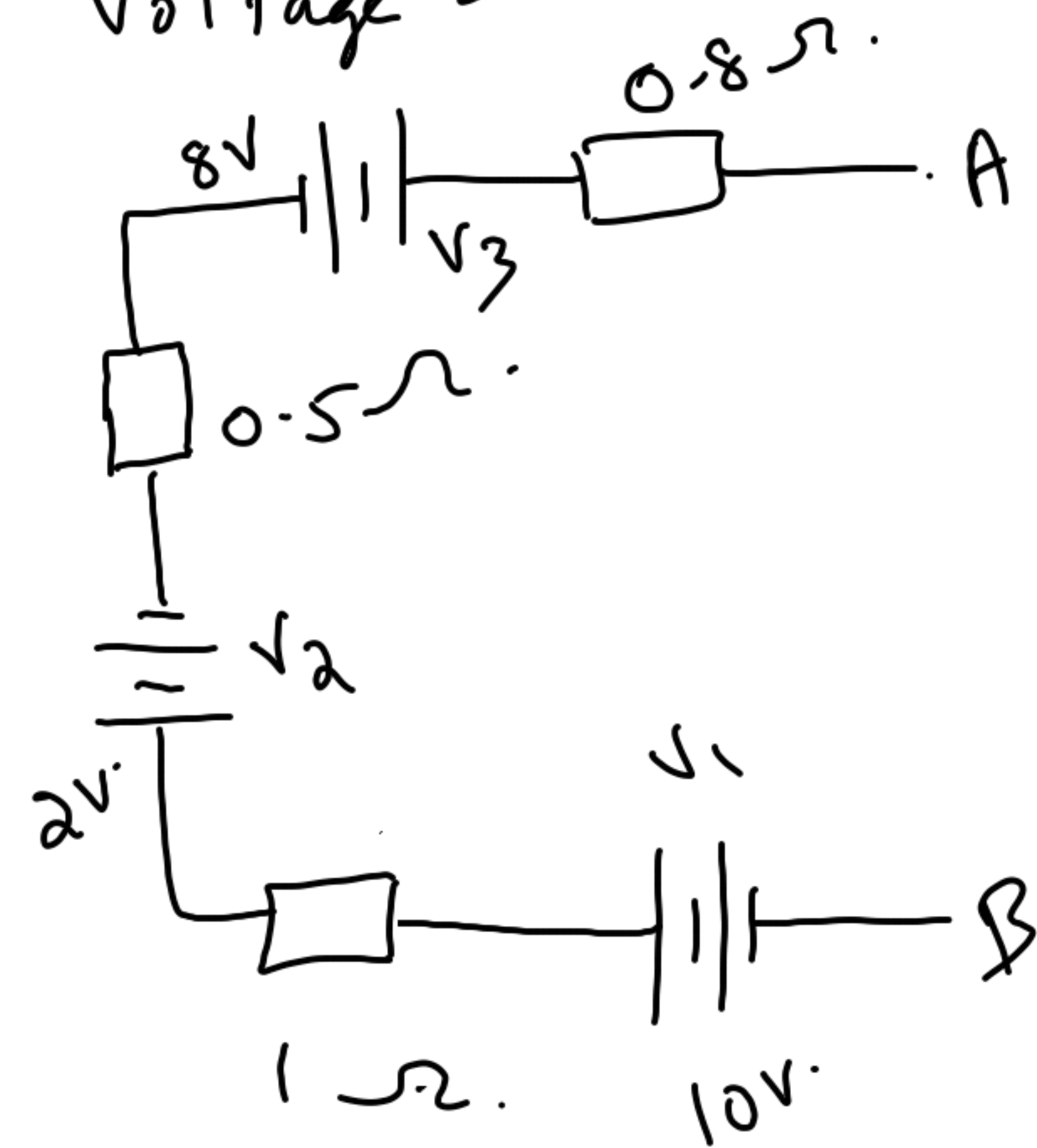
$$R_{eq} = \frac{1}{0.08}$$

$$R_{eq} = 12\Omega$$



2) For the Circuit shown below.
Obtain a circuit with a single

Voltage source.



$$V = V_1 - V_2 + V_3$$

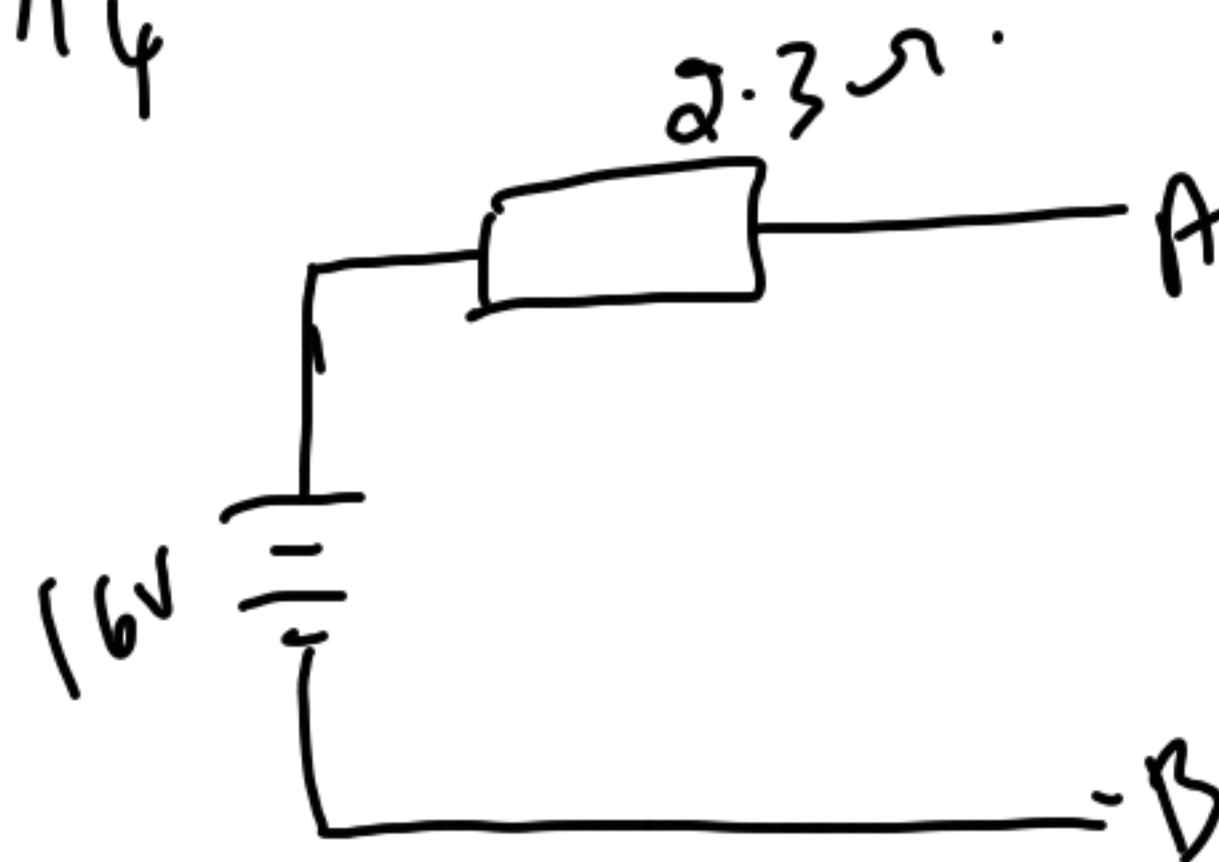
$$= 10 - 2 + 8$$

$$V = 18 - 2 = 16V.$$

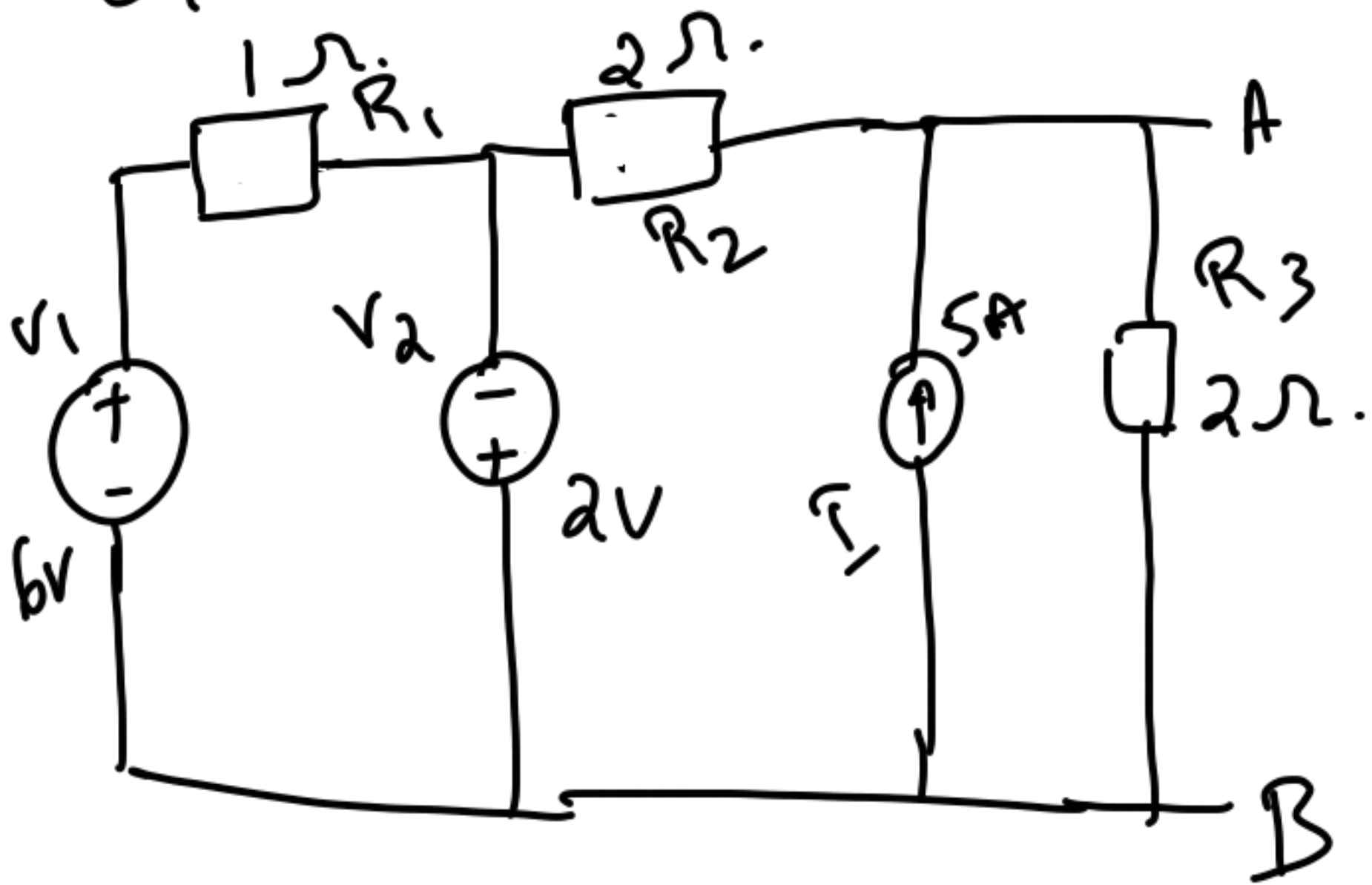
$$V = 16V.$$

$$R_t = 1 + 0.5 + 0.8$$

$$R_t = 2.3 \Omega.$$

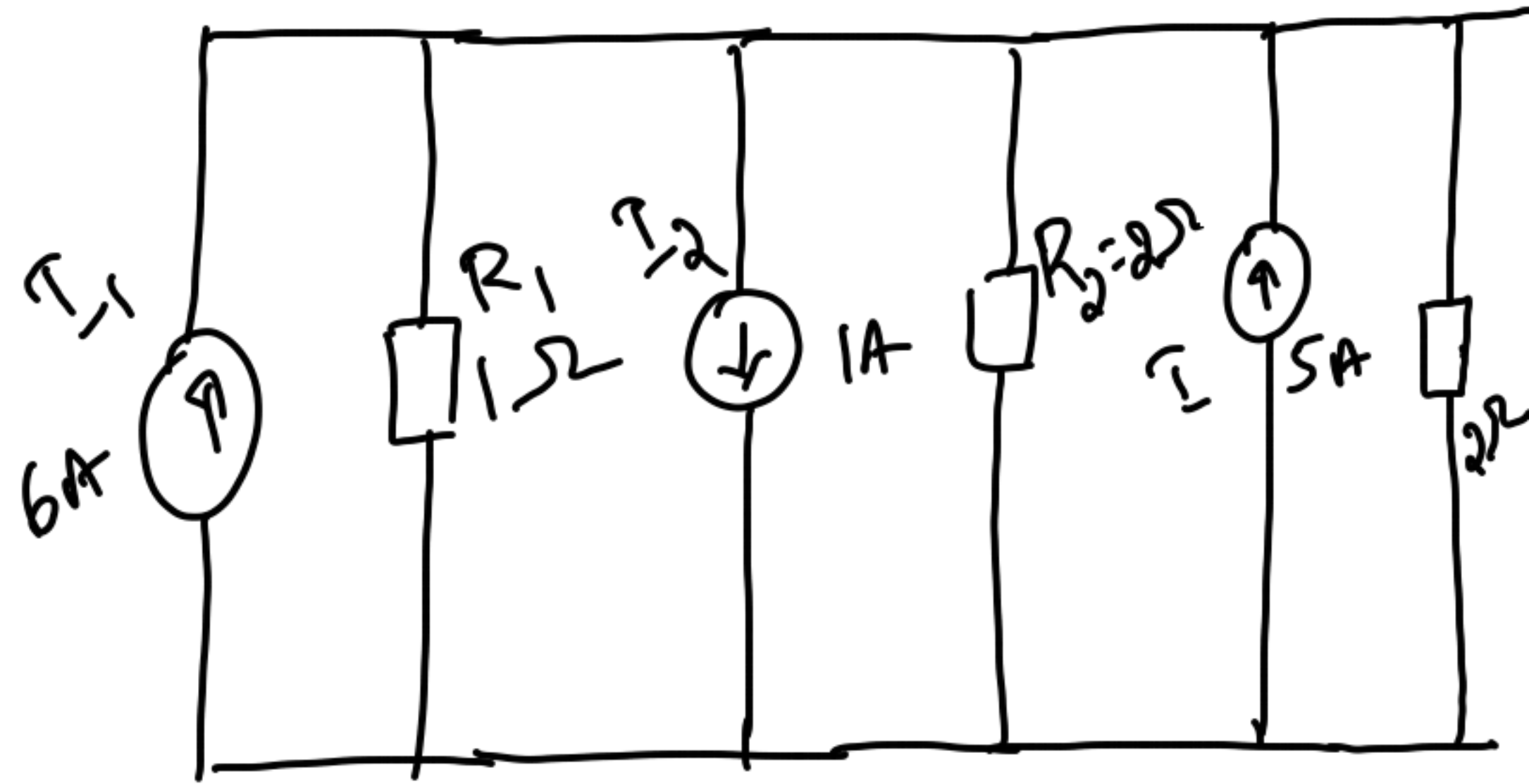


3) For the Circuit shown below,
Convert it into a circuit with single
current source.



Convert v_1 and v_2 in to current source.

$$I_1 = \frac{v_1}{R_1} = \frac{6}{1} = 6A \quad \left| \quad I_2 = \frac{v_2}{R_2} = \frac{2}{2} = 1A$$



$$I_t = I_1 + I_2 + I$$

$$= 6 + (-1) + 5$$

$$I_t = 10A$$

$$\frac{1}{R_{eq}} = \frac{1}{R_1} + \frac{1}{R_2} + \frac{1}{R_3}$$

$$= \frac{1}{1} + \frac{1}{2} + \frac{1}{2}$$

$$= 1 + 0.5 + 0.5$$

$$= 2$$

$$R_{eq} = \frac{1}{2} = 0.5 \Omega$$

