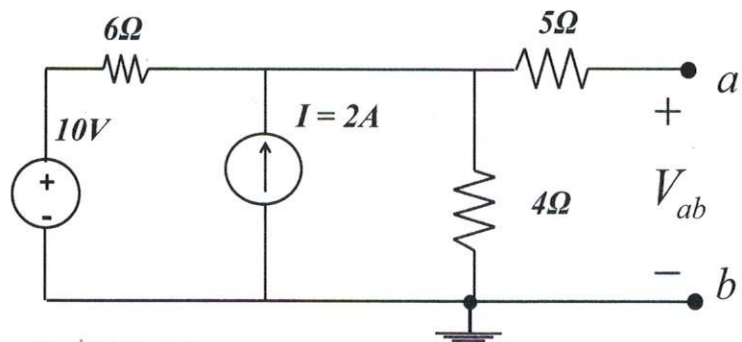


Name :

ID #

Problem # 1(10 Points)In this circuit, using superposition, find the open circuit voltage V_{ab} .

V_{ab} is the same voltage across the 4Ω resistor

First let's short-circuit the voltage source,

$$V_{ab_1} = I \cdot (6\Omega \parallel 4\Omega) = 2 \times \frac{24}{10} = 4.8 \text{ V}$$

$$V_{ab_1} = \frac{24}{5} = 4.8 \text{ V}$$

Then open-circuit I current source, then

$$V_{ab_2} = \frac{10\text{V} \cdot 4\Omega}{6\Omega + 4\Omega} = 4 \text{ V}$$

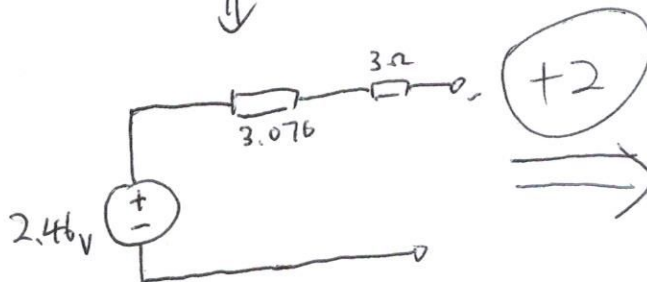
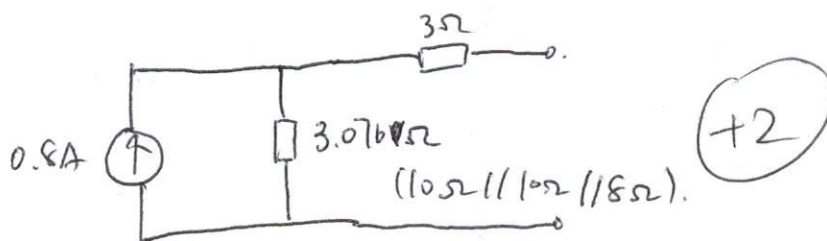
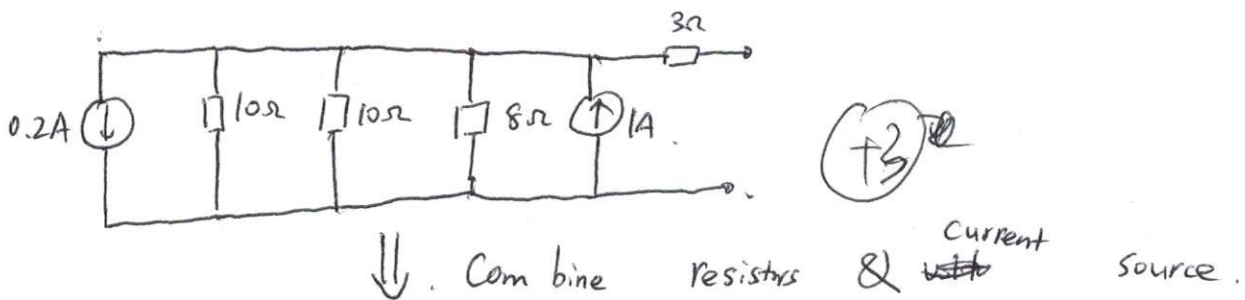
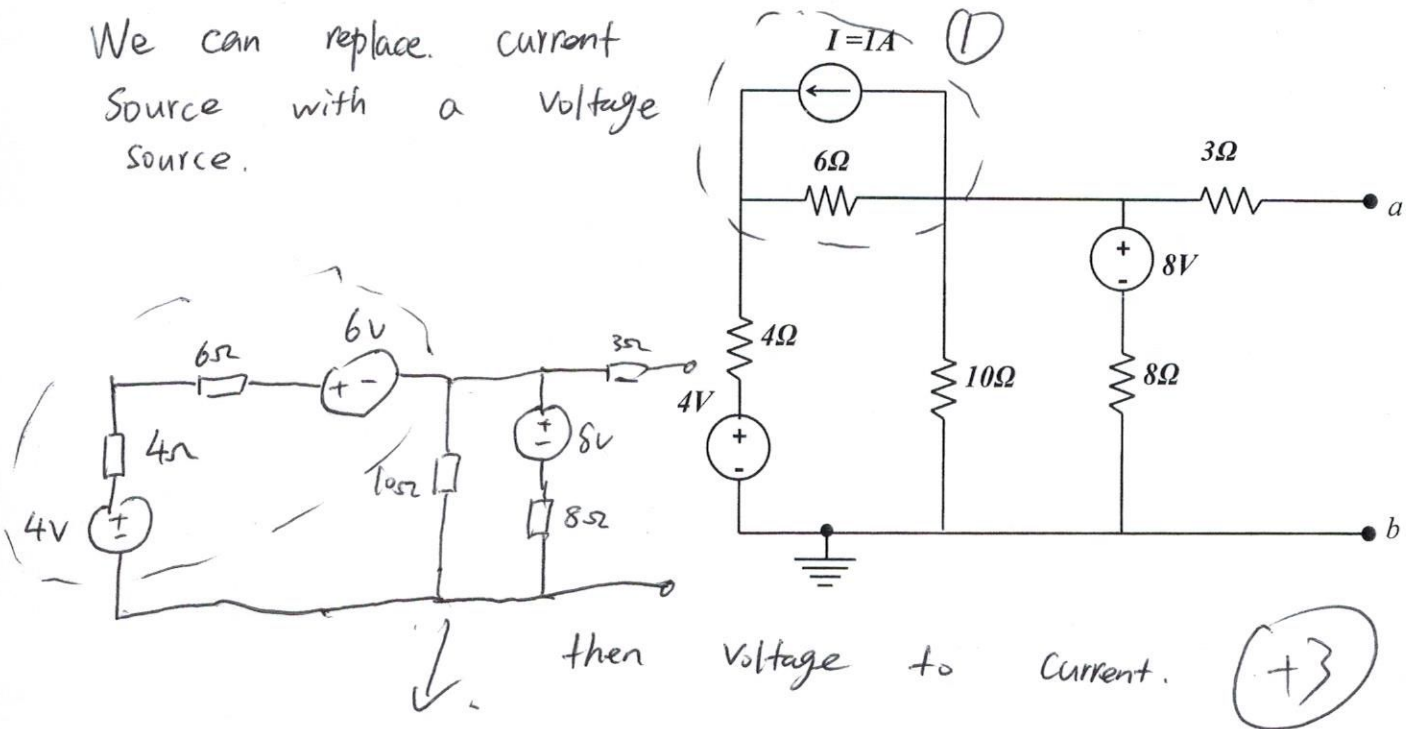
$$V_{ab} = V_{ab_1} + V_{ab_2}$$

$$= 4.8 + 4 = 8.8 \text{ V}$$

Problem # 2 (10 points)

Reduce this circuit to its Thevenin equivalent at terminals a-b by keep using source transformation. How much is the resulting V_{Th} and R_{Th} ?

We can replace current source with a voltage source.



$$V_{Th} = 2.46V$$

$$R_{Th} = 3\Omega + 3.076\Omega = 6.076\Omega$$