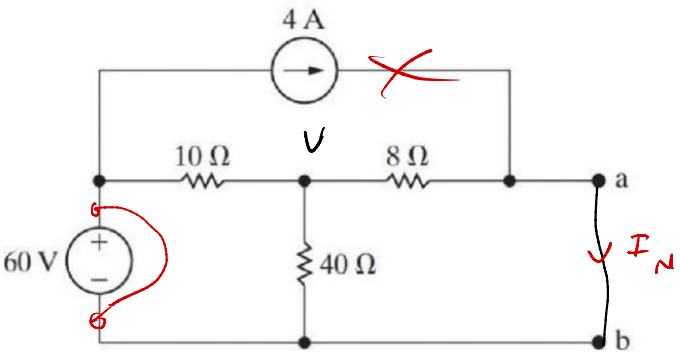


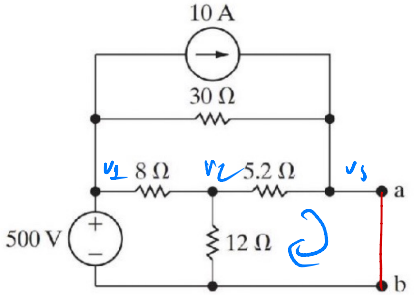
$R_{eq} = (10 \| 40) + 8 = 16 = R_{th}$

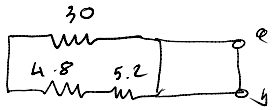
Node-Voltage at V: $\frac{V-60}{10} + \frac{V}{40} + \frac{V}{8} = 0$

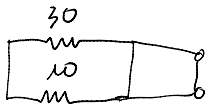
$\Rightarrow V = 24$ V

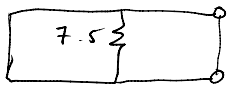
$I_N = 4 + \frac{V_1}{8} = 7$ A

8 // 12









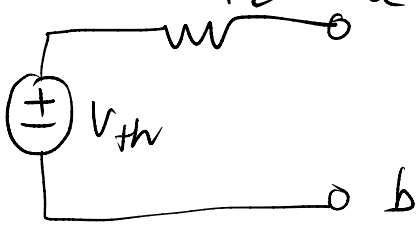
$$R_{th} = (8 \,//\, 12 + 5.2) \,//\, 30$$
$$= 7.5\ \Omega$$

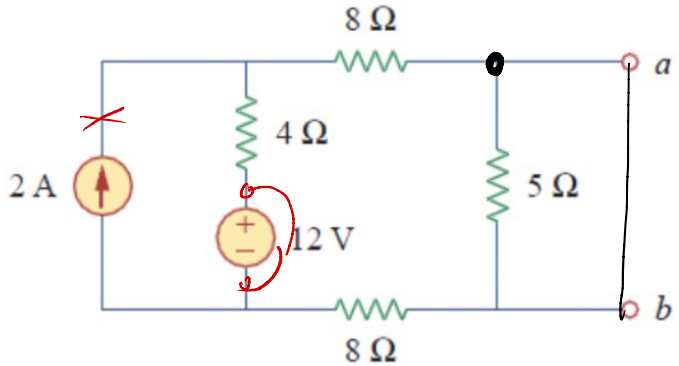
$$V_1 = 500\ V$$

Node 2: $\frac{V_2 - 500}{8} + \frac{V_2 - V_3}{5.2} + \frac{V_2}{12} = 0$

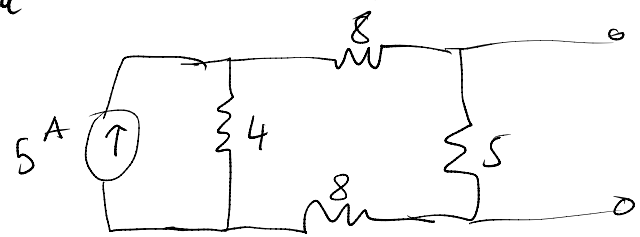
Node 3: $\frac{V_3 - 500}{30} + \frac{V_3 - V_2}{5.2} - 10 = 0$

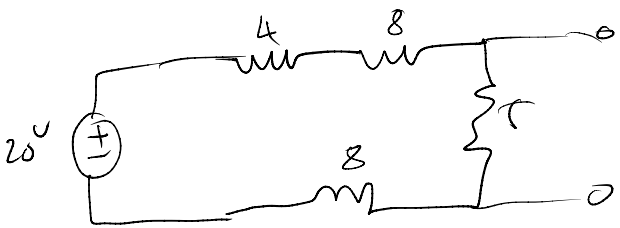
$$\Rightarrow \begin{cases} V_2 = 360\ V \\ V_3 = 425\ V = V_{th} \end{cases}$$



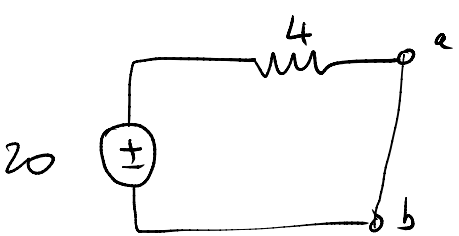


$R_{eq} = (8 + 4 + 8) \parallel 5 = 4\,\Omega$



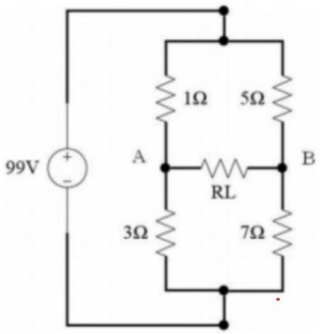


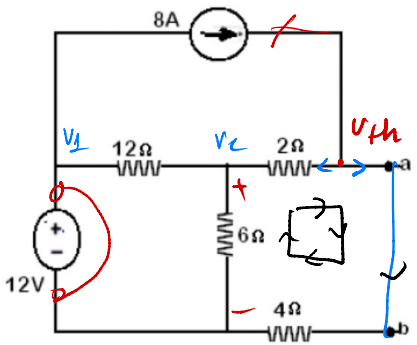
$$V_{ab} = \frac{5}{4 + 8 + 8} \times 20 = 5\ V$$



Problem 4

1) Find the Thevenin equivalent of the below circuit with respect to the terminal AB and draw it out.
2) Calculate RL so that the load has maximum power.

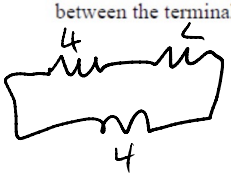




Prob.#5 (20 pts) (a) Draw Thevénin's equivalent circuit, between the terminals **a ,b.**

(b) Find the maximum power that can be transmitted to a load, **Ro**, placed between the terminals **a**, **b**.

v_{th}



$$R_{th} = (12 \| 6) + 2 + 4 = 10\,\Omega$$

$$\begin{cases} \dfrac{v_2 - 12}{12} + \dfrac{v_2 - v_{th}}{2} + \dfrac{v_2}{6} = 0 \\ \dfrac{v_{th} - v_2}{2} - 8 = 0 \end{cases}$$

$$\Rightarrow \begin{cases} v_2 = 36 \\ v_{th} = 52 \end{cases}$$