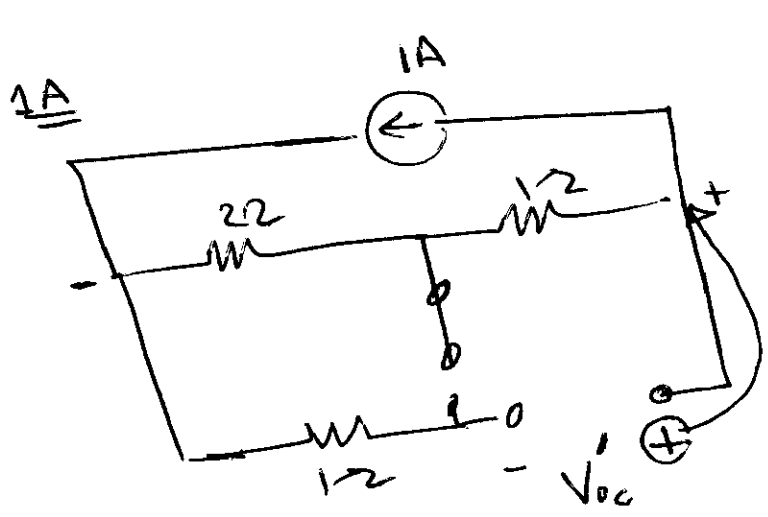
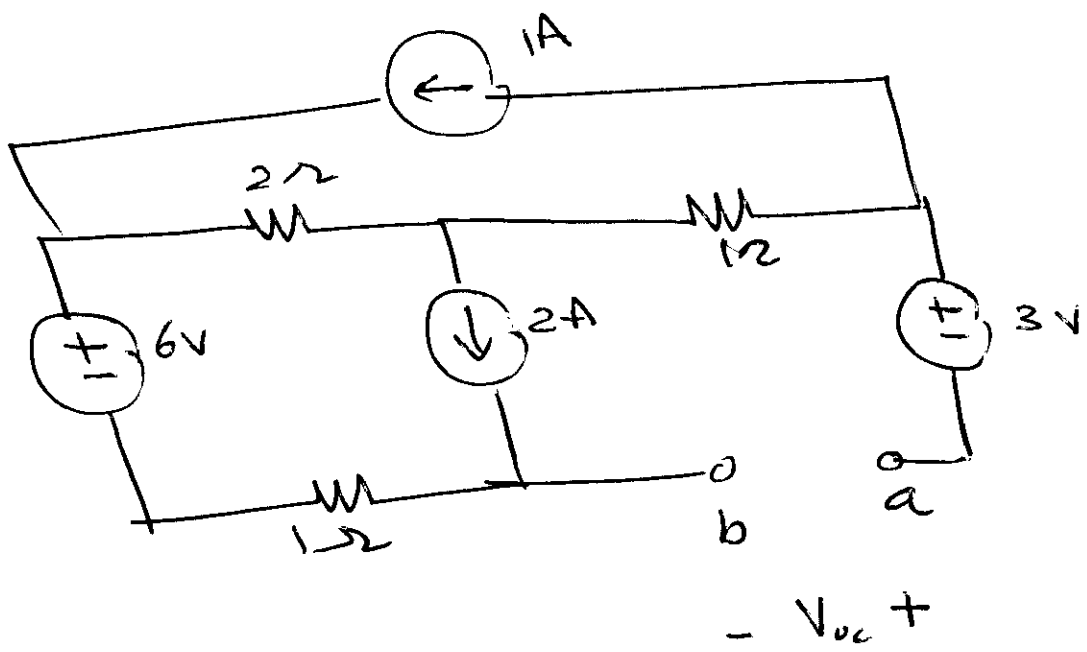
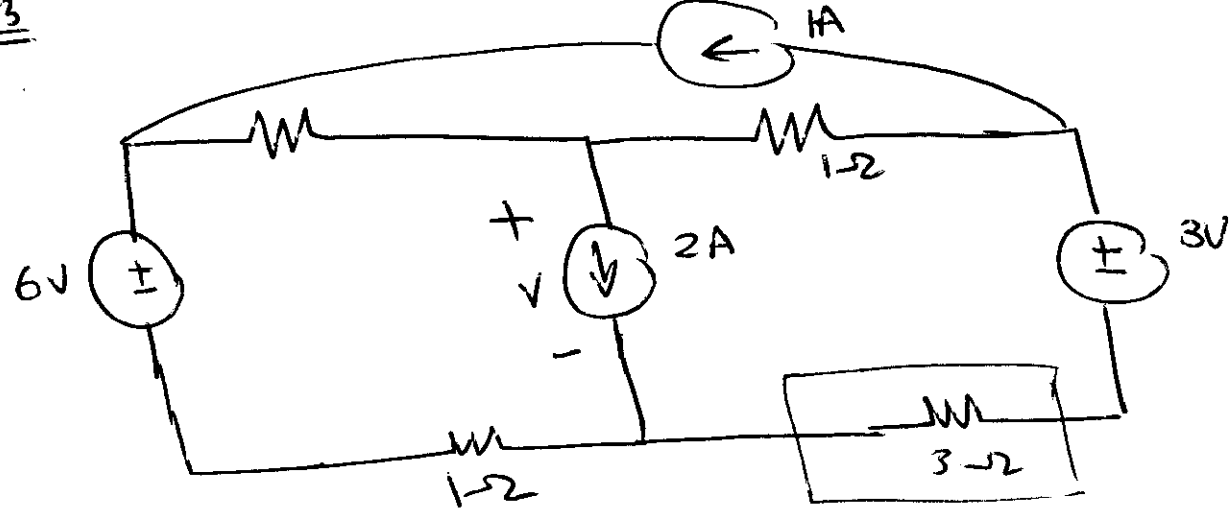
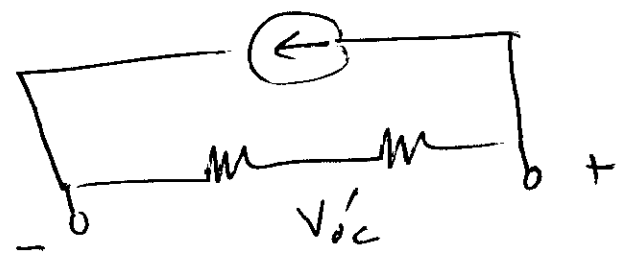


Ex 3.3

(1)

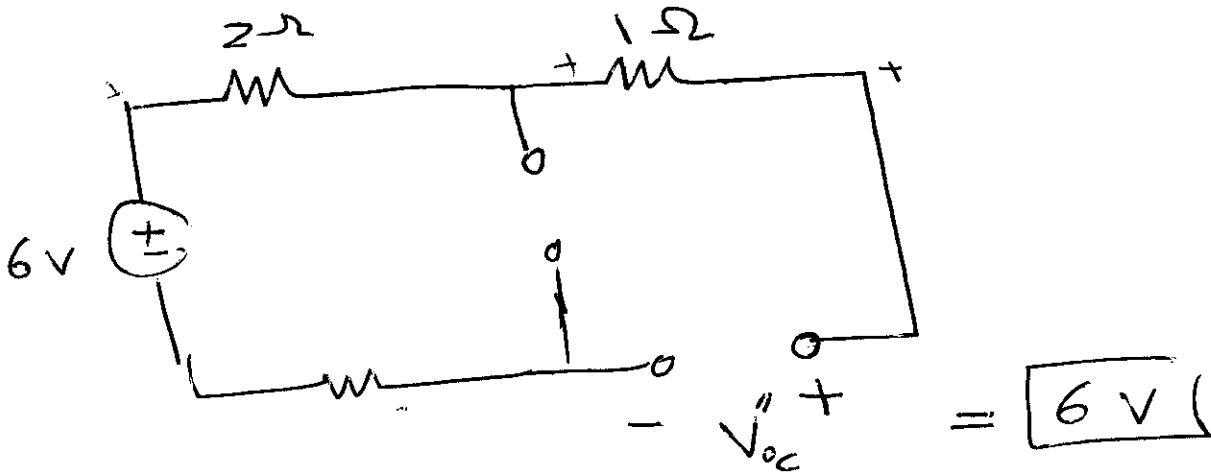


$$V'_{oc} = -(2+1)(1) = -3 \text{ V}$$

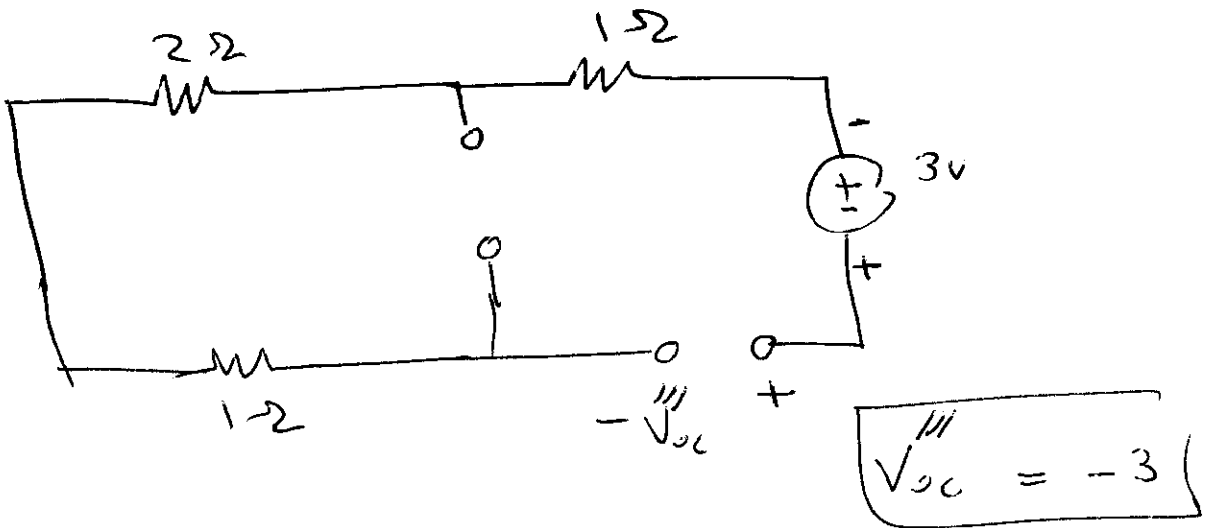


6V

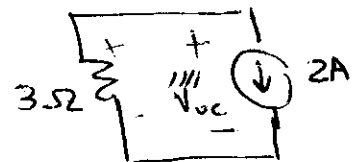
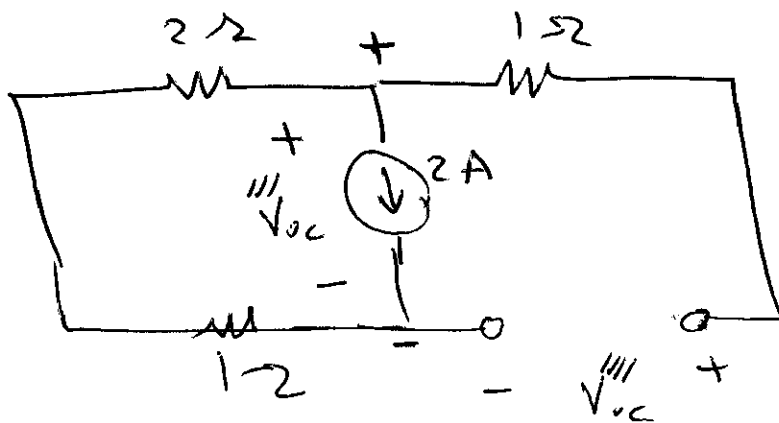
(2)



3V



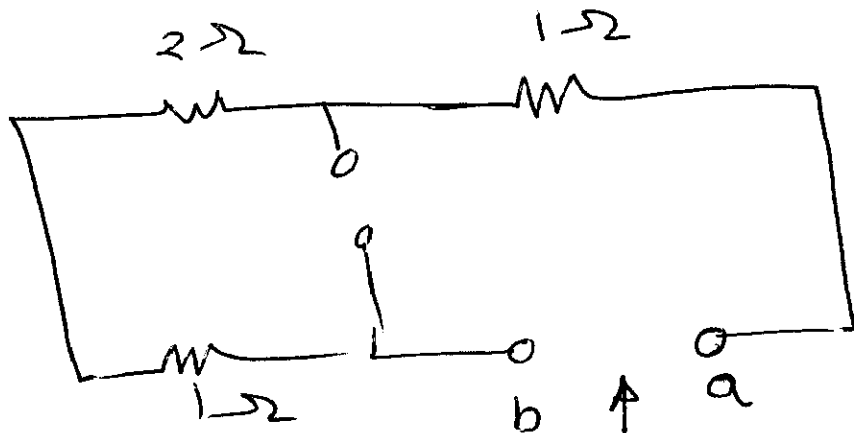
2A



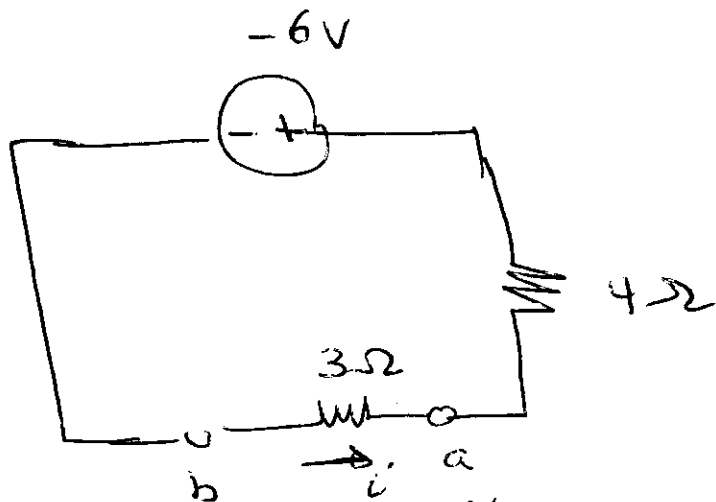
$$V_{oc} = -3(2) = -6V$$

$$\begin{aligned} \Rightarrow V_{oc} &= V_{oc}' + V_{oc}'' + V_{oc}''' + V_{oc}'''' \\ &= (-3) + (6) + (-3) + (-6) \\ &= \boxed{-6V} \end{aligned}$$

R_{th}



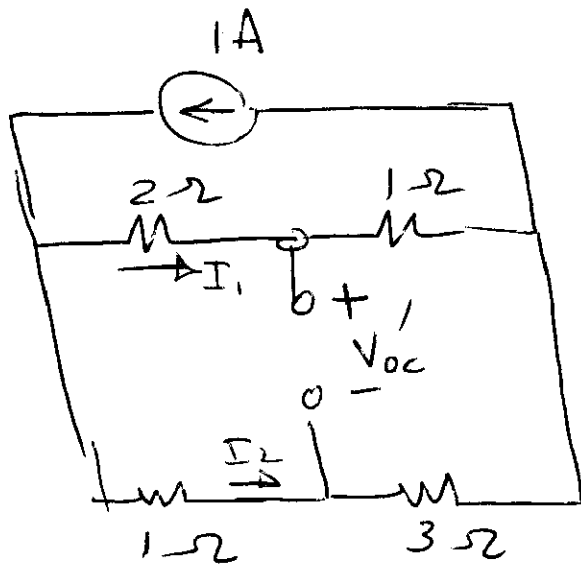
$$R_{th} = 1 + 2 + 1 = 4\Omega$$



$$i = -\frac{-6}{4+3} = \frac{6}{7} A$$

To Find v

1A



$$I_1 = \frac{(1+3)}{(1+3) + (2+1)} \cdot 1$$
$$= \frac{4}{7} (1) = \frac{4}{7}$$

$$I_2 = 1 - \frac{4}{7} = \frac{3}{7}$$

OR

$$\frac{(2+1)}{(2+1) + (1+1)} \cdot 1$$
$$= \frac{3}{7} \cdot 1 = \frac{3}{7}$$

KVL $2I_1 + v'_{oc} - 1I_2 = 0$

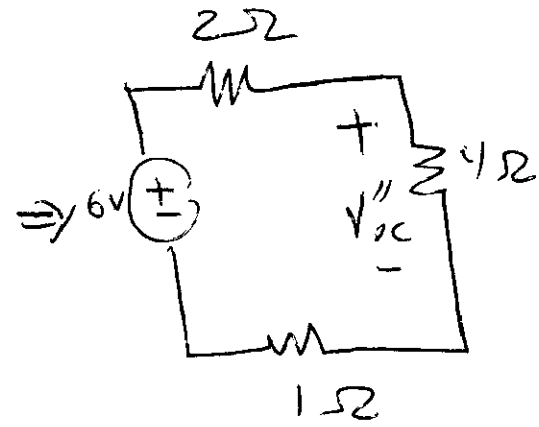
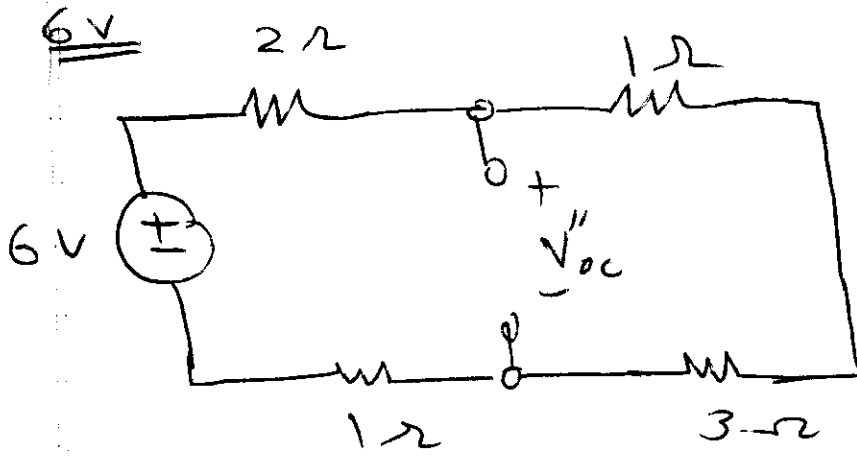
$$2\left(\frac{4}{7}\right) + v'_{oc} - \frac{3}{7} = 0$$

$$v'_{oc} = \frac{3}{7} - \frac{8}{7} = -\frac{5}{7} \text{ V}$$

OR $1I_1 - 3I_2 - v'_{oc} = 0$

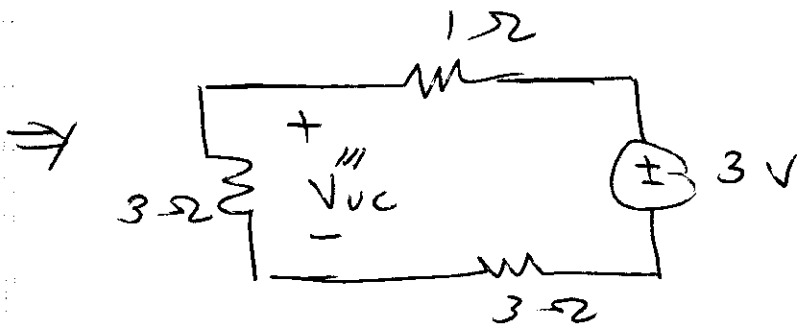
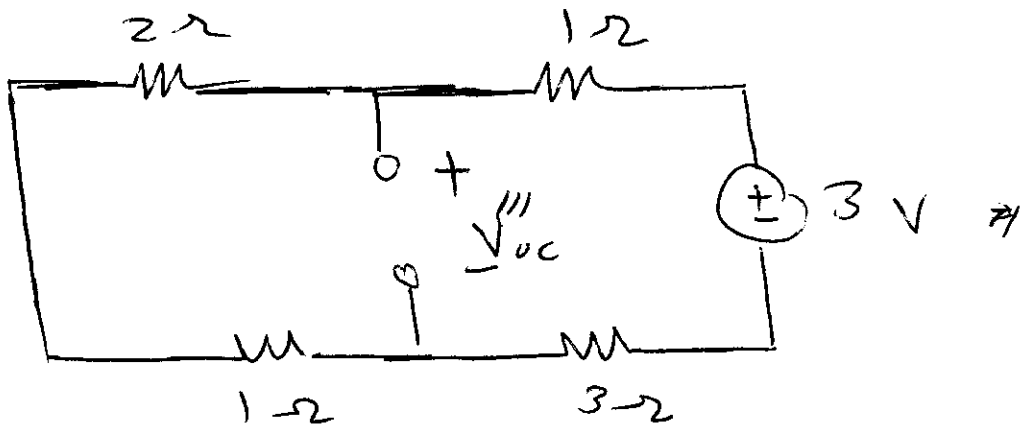
$$v'_{oc} = I_1 - 3I_2 = \frac{4}{7} - 3\left(\frac{3}{7}\right)$$

$$= \frac{4}{7} - \frac{9}{7} = -\frac{5}{7} \text{ V}$$



$$V''_{oc} = \frac{4}{2+4+1} 6 = \frac{24}{7} \text{ V}$$

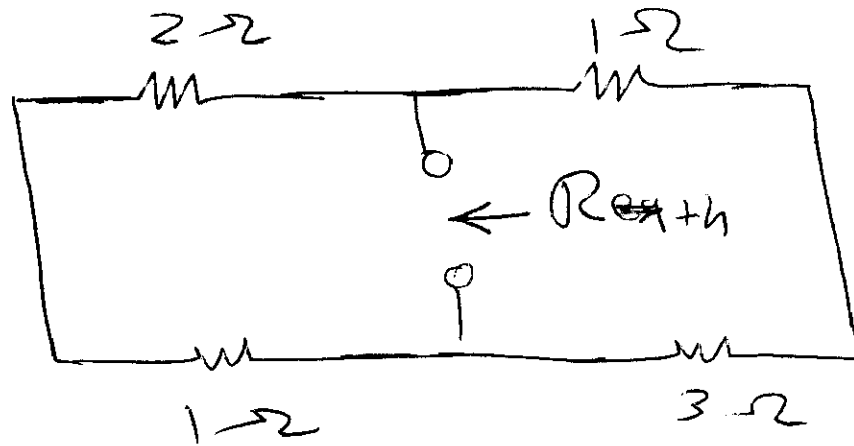
3V



$$V'''_{oc} = \frac{3}{1+3+3} 3$$

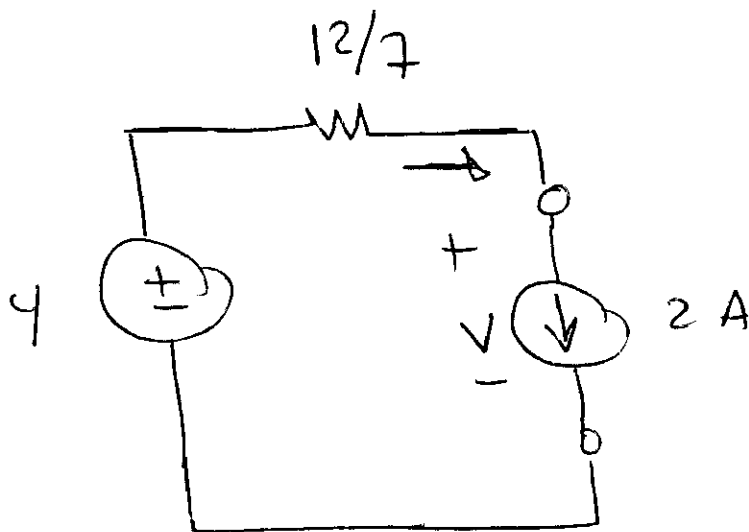
$$= \frac{9}{7} \text{ V}$$

$$V_{oc}^{\emptyset} = V_{oc}^I + V''_{oc} + V'''_{oc} = -\frac{5}{7} + \frac{24}{7} + \frac{9}{7} = \frac{28}{7} = 4 \text{ V}$$



$$R_{th} = (2+1) \parallel (1+3) = 3 \parallel 4$$

$$= \frac{12}{7} \Omega$$



$$-4 + \frac{12}{7}(2) + V = 0$$

$$\Rightarrow V = 4 - \frac{24}{7} = \frac{4}{7} V$$