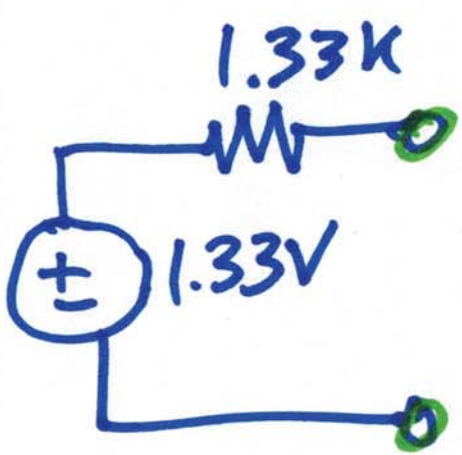
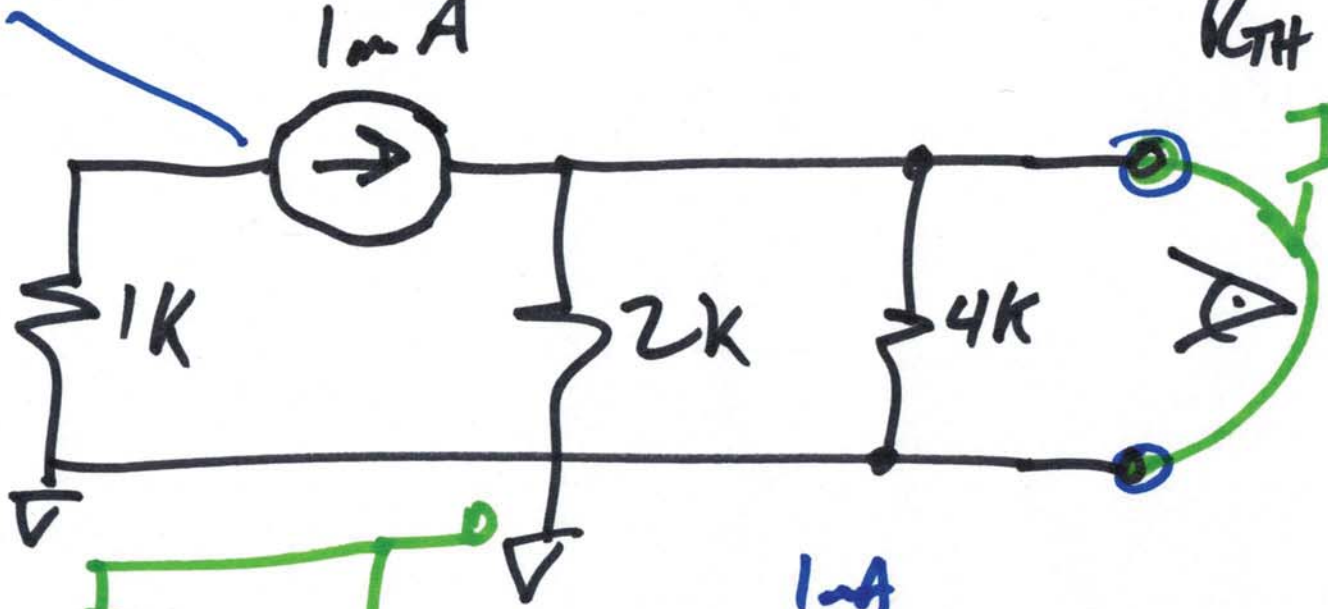
Lecture 8

Sept. 19, 2018

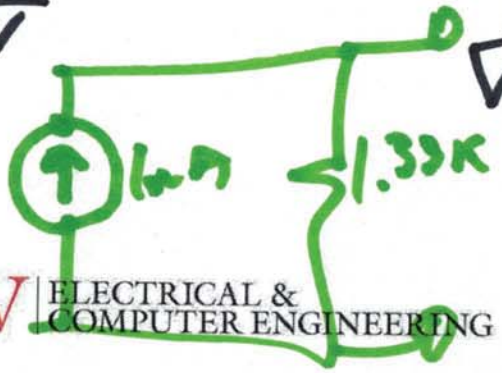
EE220 circuits 1

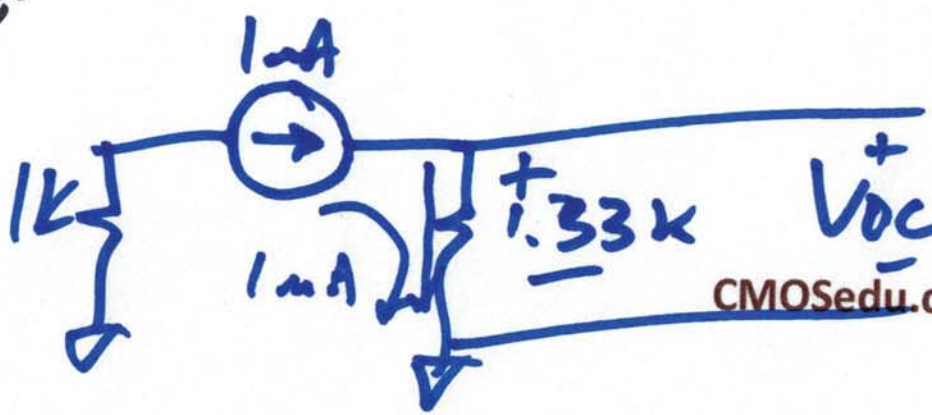


$$R_{TH} = \frac{2k \cdot 4k}{2k + 4k}$$



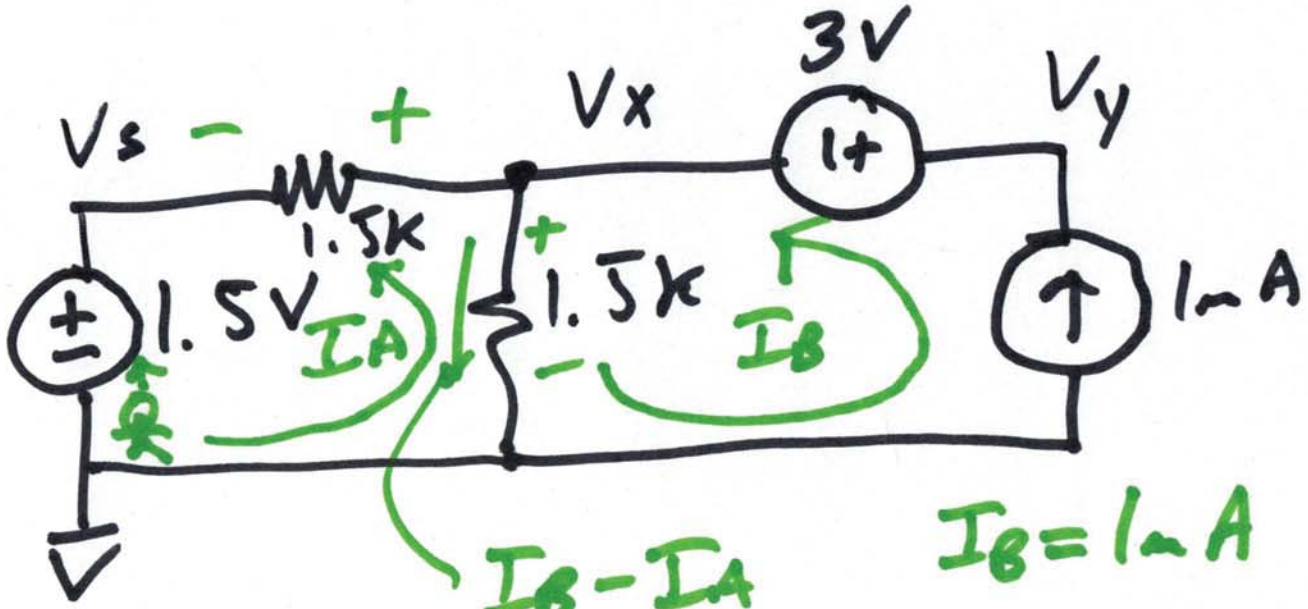
$$I_{sc} = 1mA = \frac{8K}{6} = 1.33k$$





$$V_{oc} = 1.33V = V_{TH}$$

1)



$I_B - I_A$ $\quad I_B = 1mA$

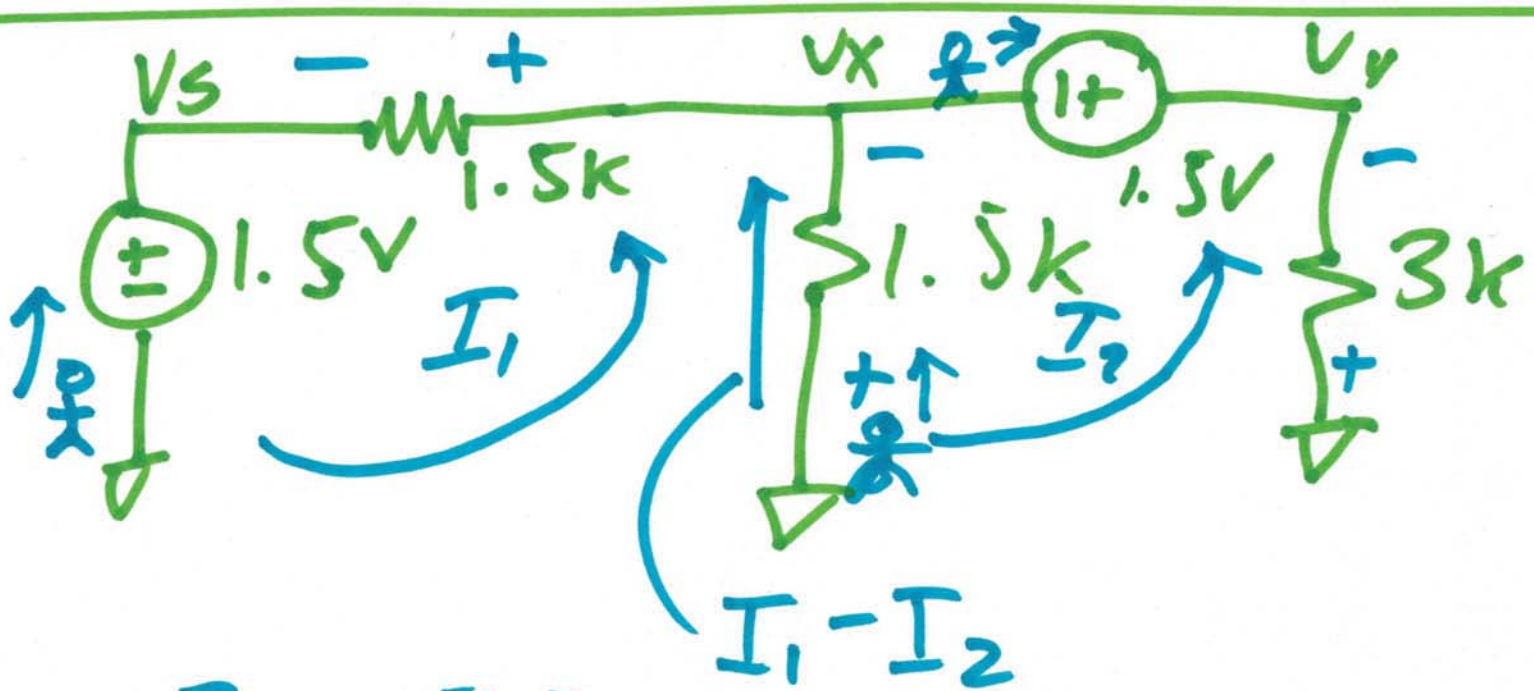
$$1.5V + 1.5K \cdot I_A - 1.5k(1mA - I_A) = 0$$

$$1.5 + 1.5k\,I_A - 1.5 + 1.5k\,I_A = 0$$

$$\boxed{I_A = 0}$$

(C) $$\frac{1.5 - V_x}{1.5k} + \frac{1.5 - V_x}{1.5k} = \frac{V_x}{3k}$$

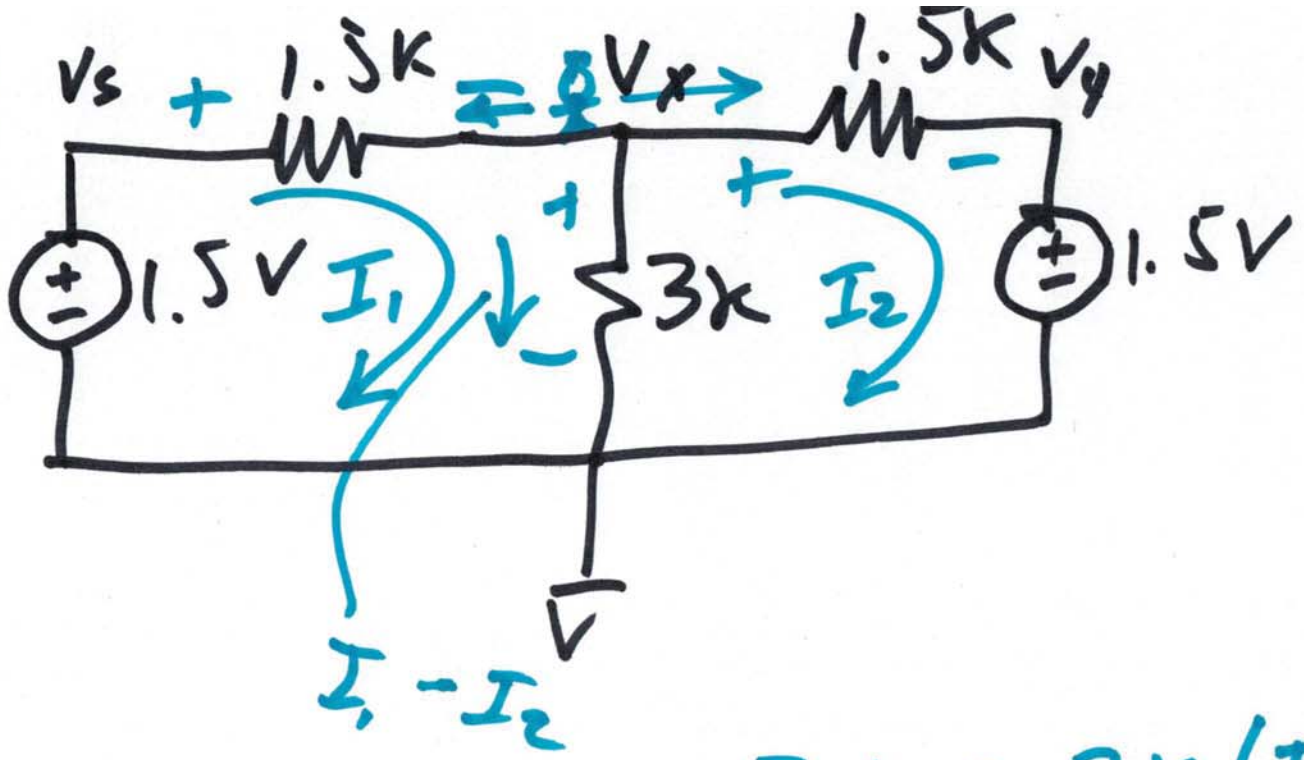
(D)



$$1.5 + 1.5k\,I_1 + 1.5k(I_1 - I_2) = 0$$

$$1.5 + 3k\,I_2 - 1.5k(I_1 - I_2) = 0$$

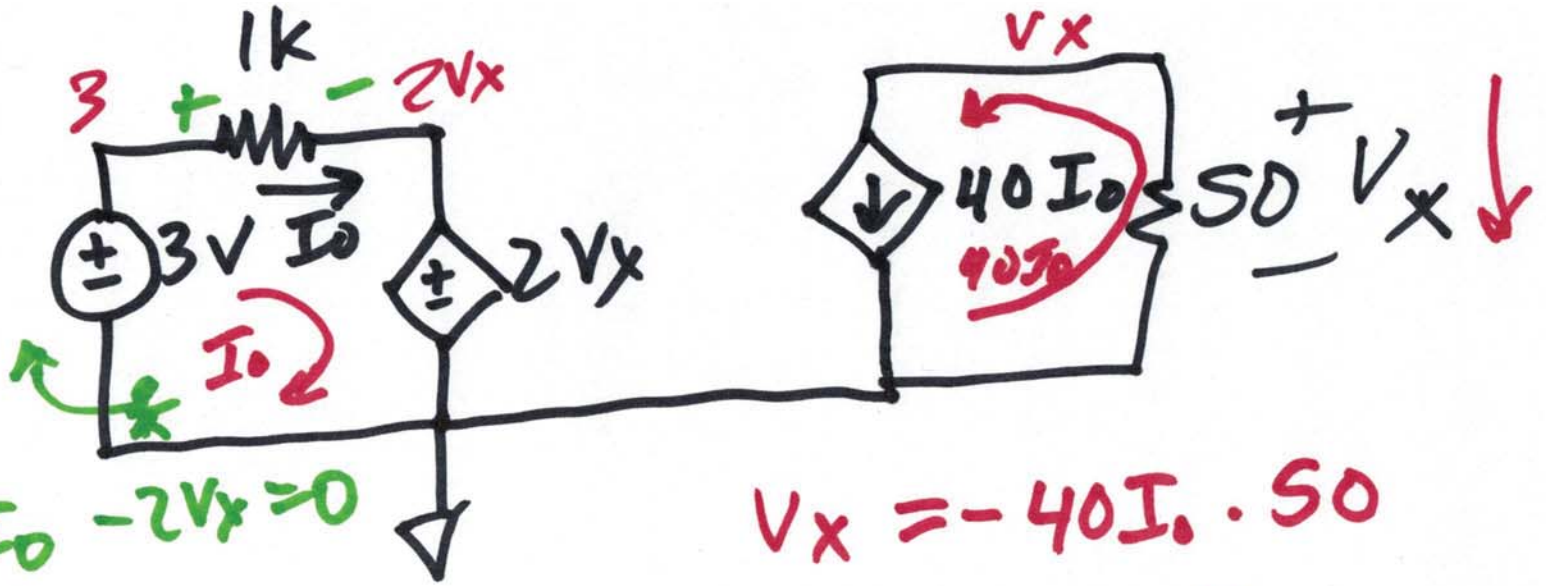
(c)



$$1.5k \cdot I_1 - 1.5V + 3k(I_1 - I_2) = 0$$

$$-(-1.5k\, I_2 - 1.5V + 3k(I_1 - I_2)) = 0$$

4.54



$3 - 1k I_o - 2V_x = 0$

$V_x = -40 I_o \cdot 50$

$V_x = -2k I_o$

$$\frac{3 - 2V_x}{1k} = I_o$$

$V_x = +2V$

$3 + 4k I_o = 1k I_o$

$3k I_o = -3$

$I_o = -1mA$