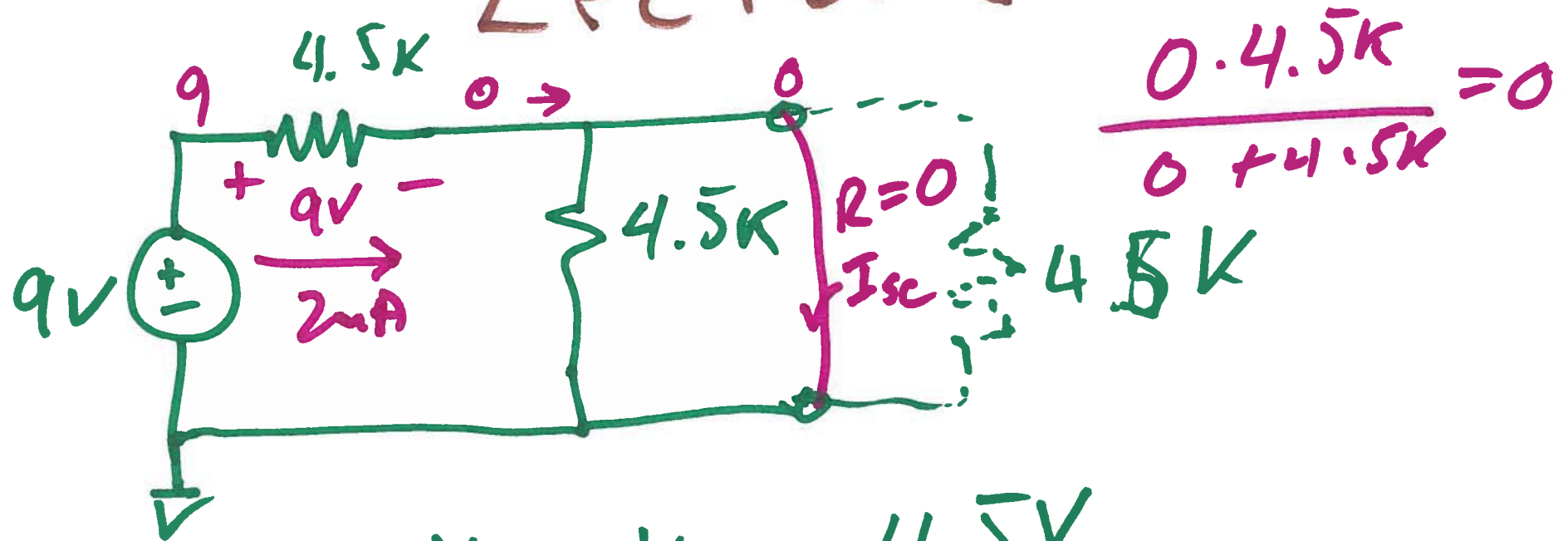


EE 220

Circuits I

Lecture 8

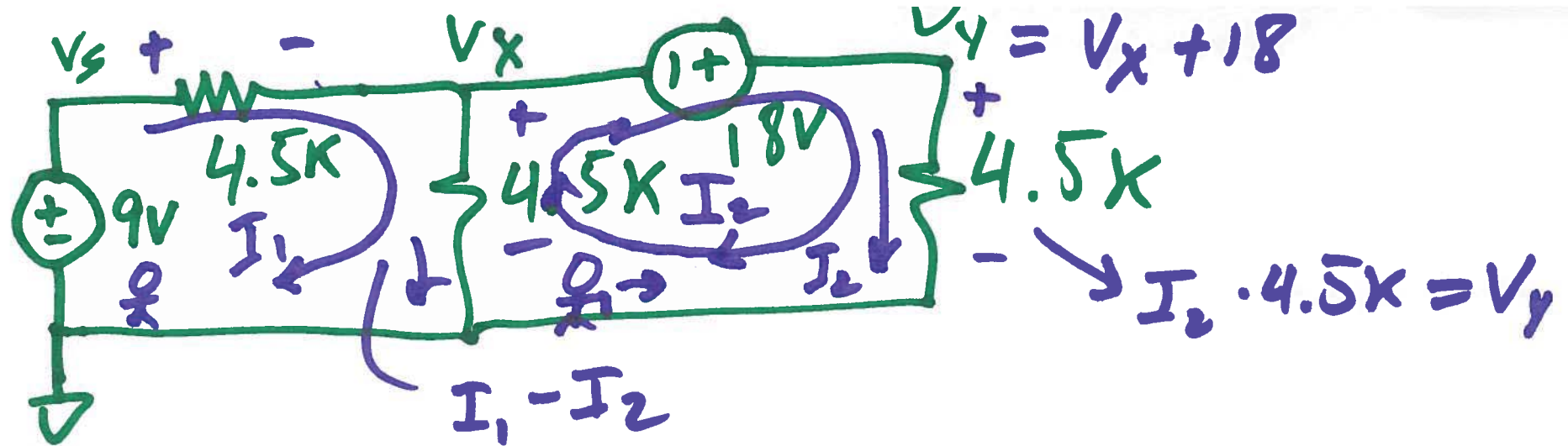


$$V_{OC} = V_{TH} = 4.5V$$

$$R_{TH} = 7.25k, I_{SC} = 2mA$$

$$R_{TH} = \frac{V_{TH}}{I_{SC}} = 7.25k$$

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$$9V - 4.5k \cdot I_1 - 4.5k(I_1 - I_2) = 0$$

$$I_2 \cdot 4.5k - 18 - 4.5k(I_1 - I_2) = 0$$

$$2mA - I_1 - I_1 + I_2 = 0$$

$$I_2 = 2I_1 - 2mA$$

$$I_2 - 4mA - I_1 + I_2 = 0$$

$$2I_2 - I_1 - 4mA = 0$$

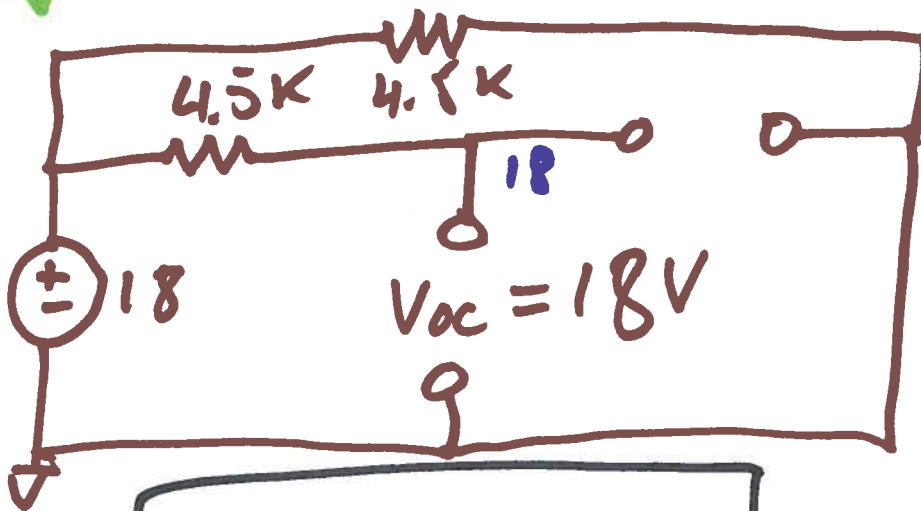
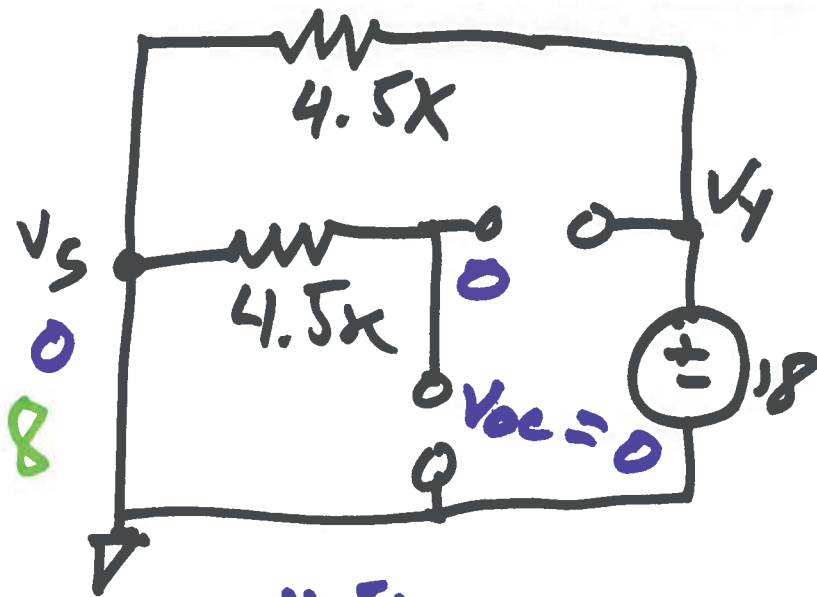
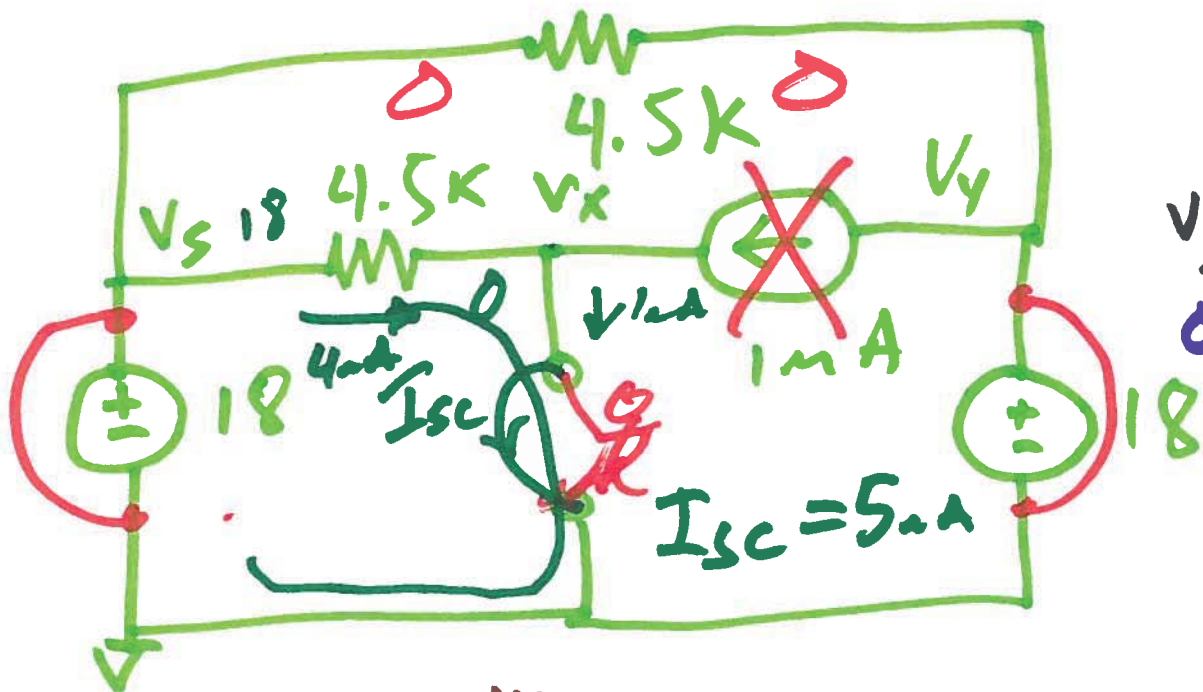
$$2(2I_1 - 2\text{mA}) - I_1 - 4\text{mA} = 0$$

$$4I_1 - \overset{4}{\cancel{8}}\text{mA} - I_1 - 4\text{mA} = 0$$

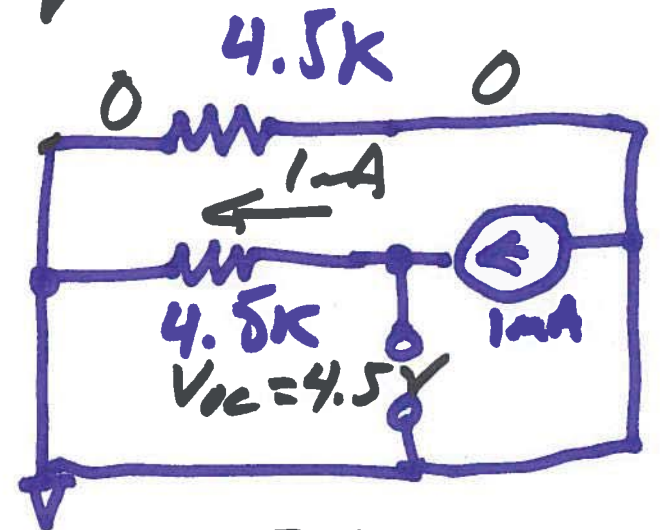
$$3I_1 - \overset{8}{\cancel{12}}\text{mA} = 0$$

$$I_1 = \overset{8/3}{\cancel{3}}\text{mA}$$

$$I_1 = \frac{8}{3}\text{mA} = 2.66\text{mA}$$



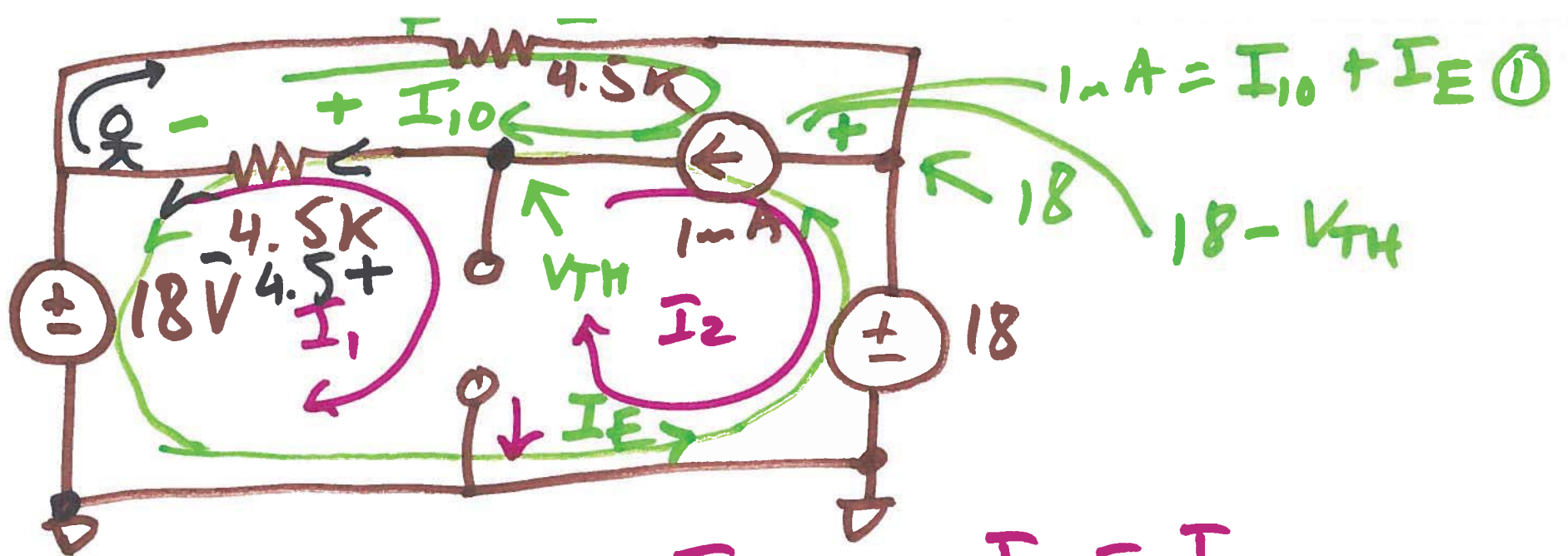
$$V_{TH} = 22.5V$$



$$R_{TH} = \frac{22.5}{5mA} = 4.5k$$

$$R_{TH} = 4.5k$$

4)



$$I_1 - I_2 = 0, I_1 = I_2$$

$$-I_{10} \cdot 4.5V$$

$$I_{10} = 0, I_E = 1mA$$

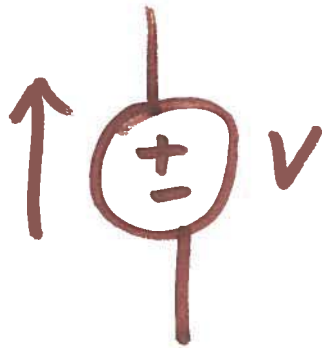
$$V_{TH} = V_{OC} = 4.5 + 18 = \underline{\underline{22.5V}}$$

5)

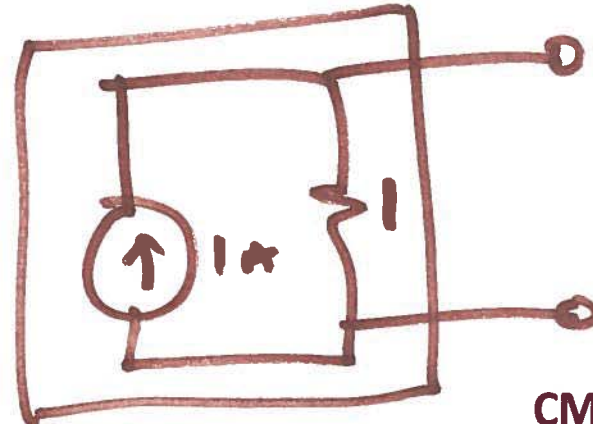
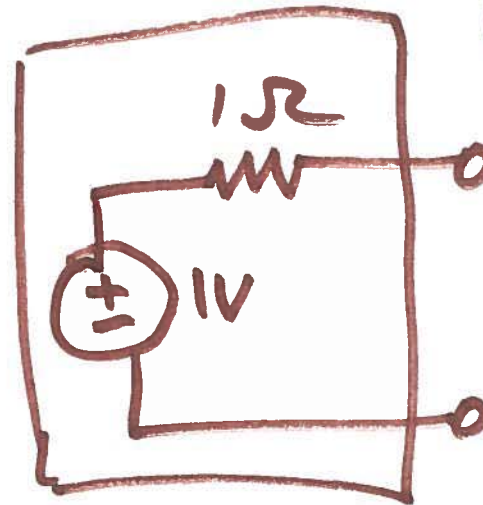
POWER, WATTS (Joules/s)



$$\text{Power} = V \cdot I, \text{ WATTS } \\ (\text{DC}) @$$



$$P = \text{Neg.}$$



DEPENDENT SOURCES

