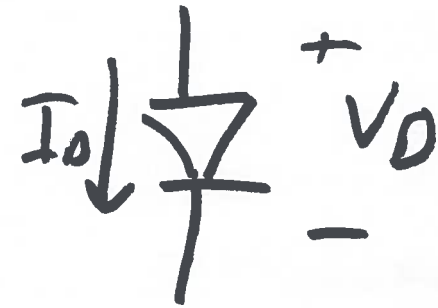
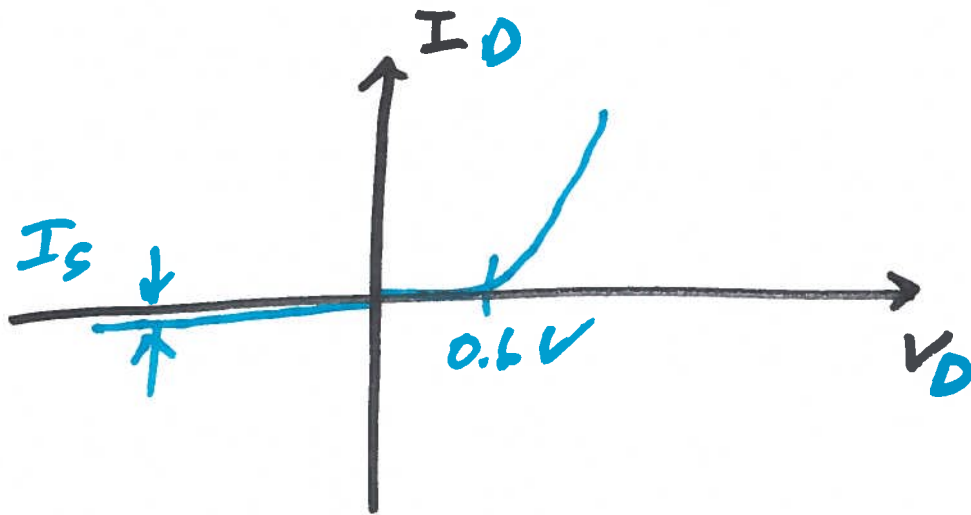


EE 420 / ECE 620

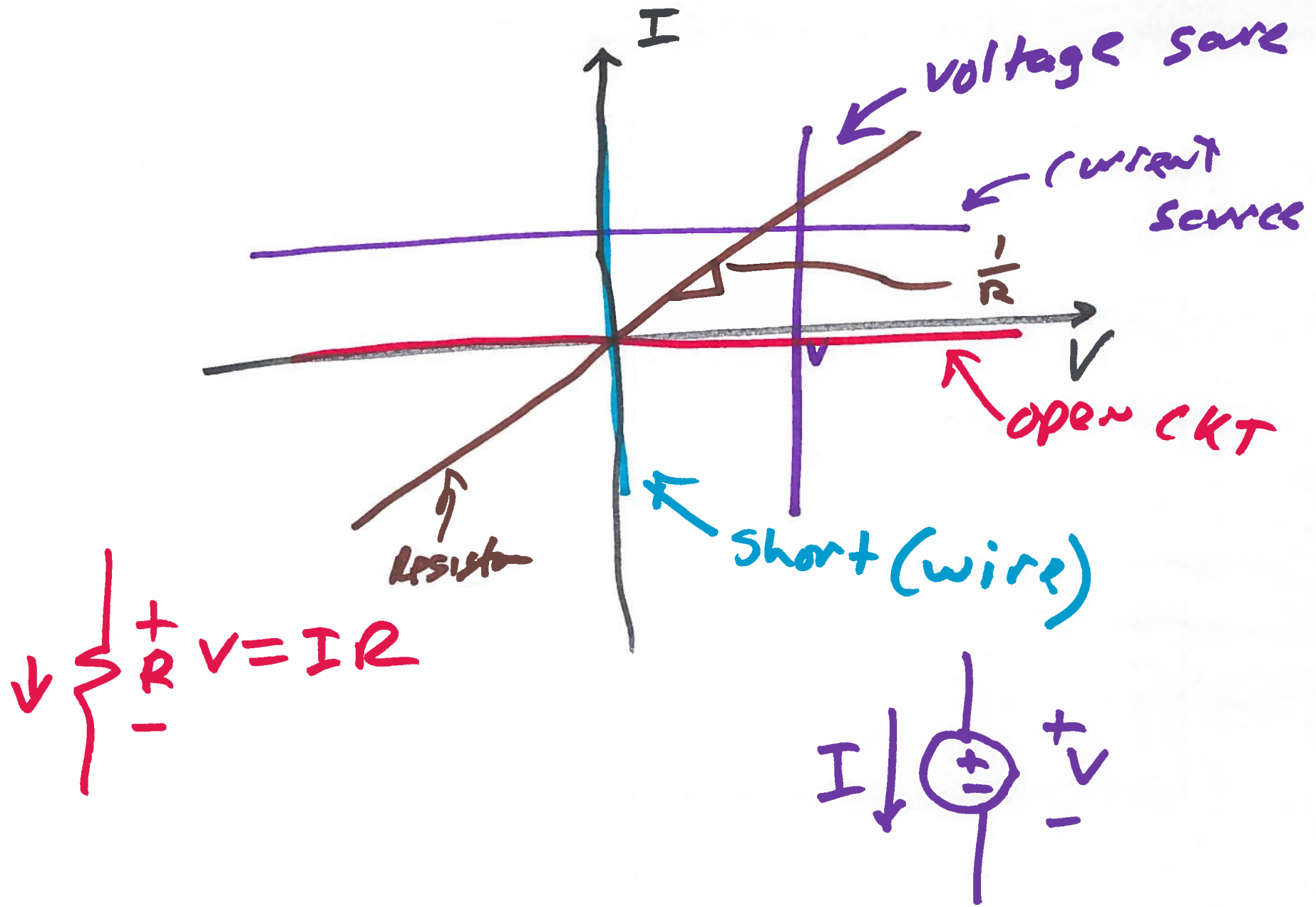
Lecture 1

JAN. 23, 2019

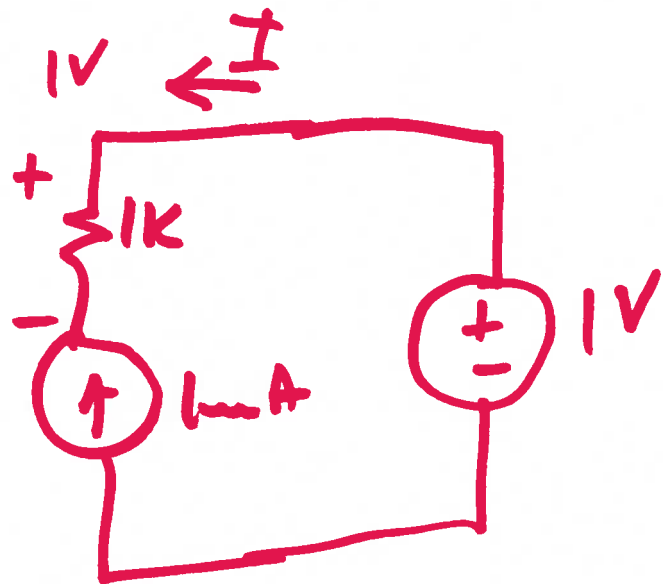
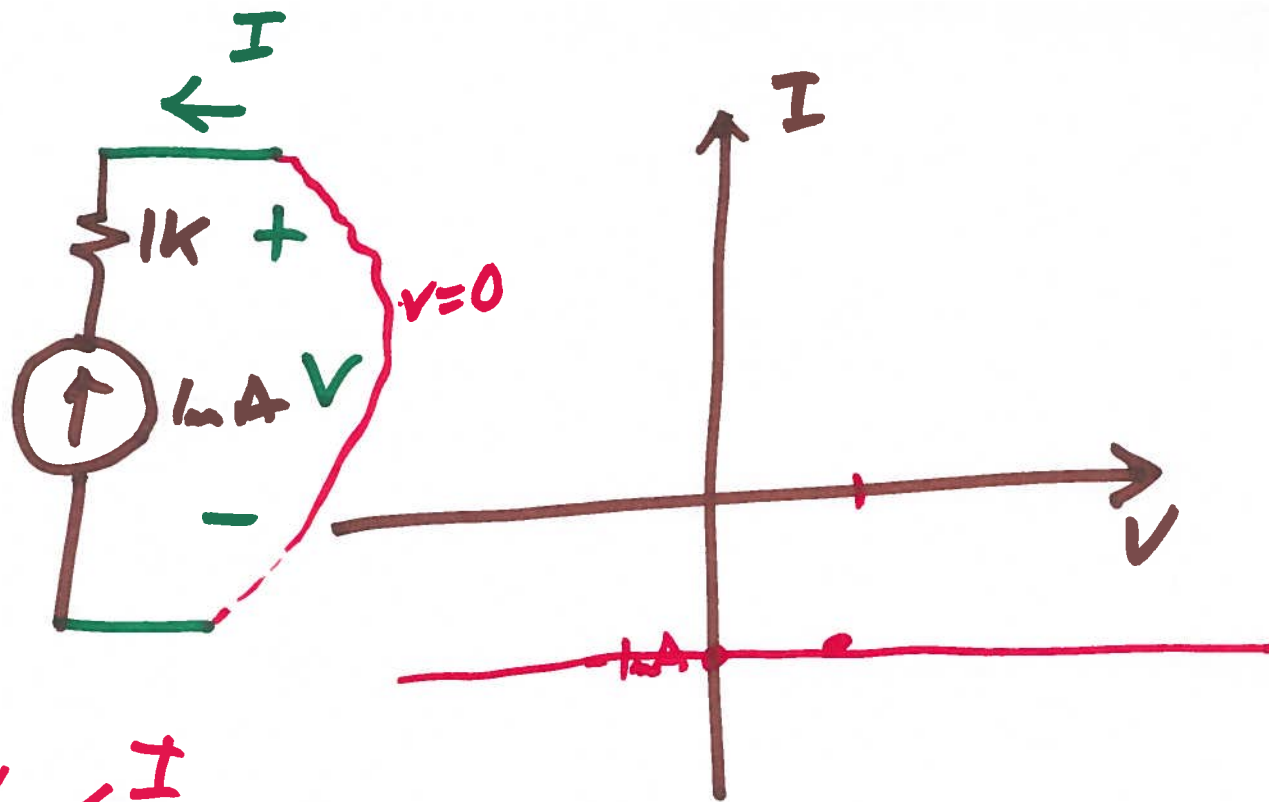
diode

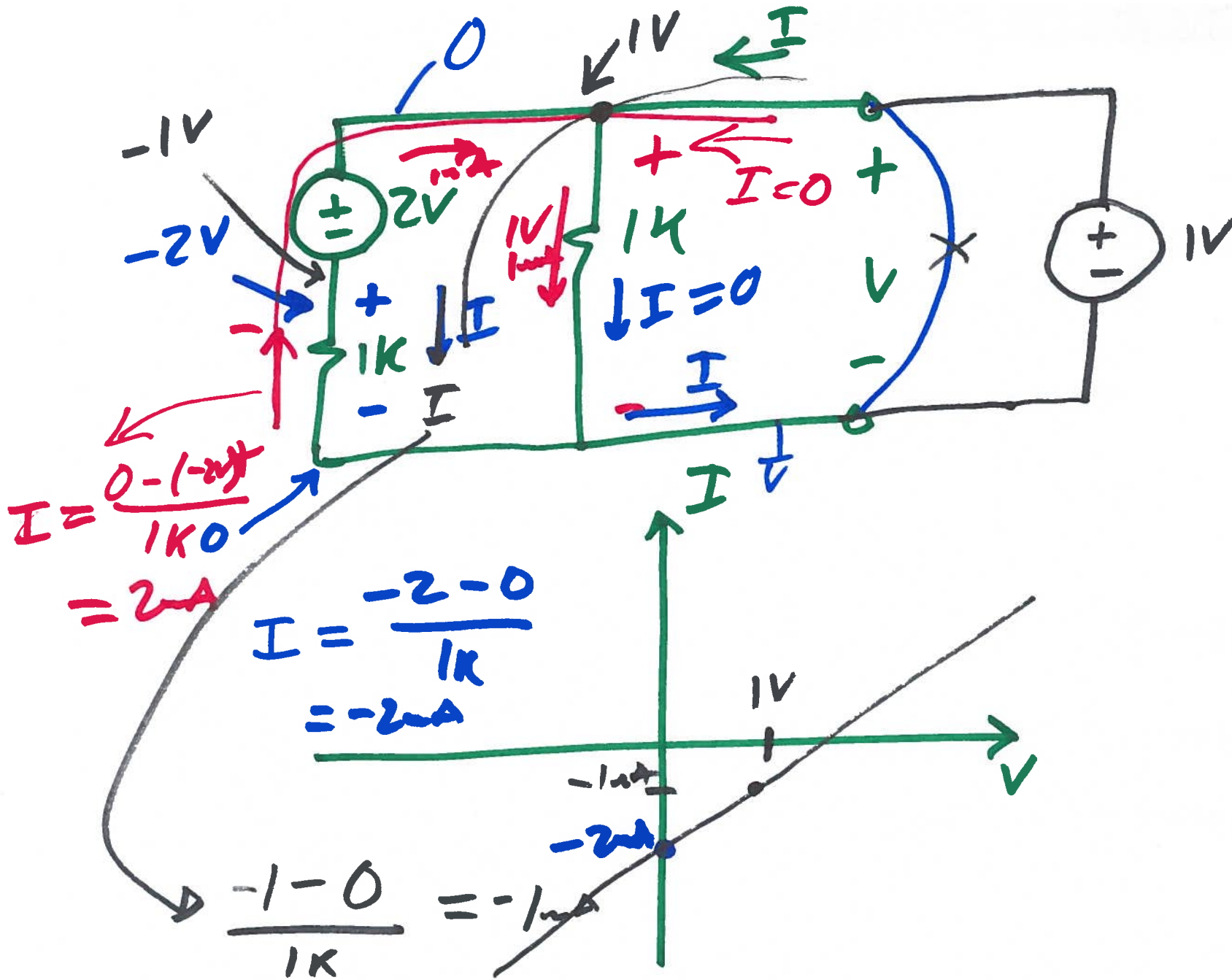


1)

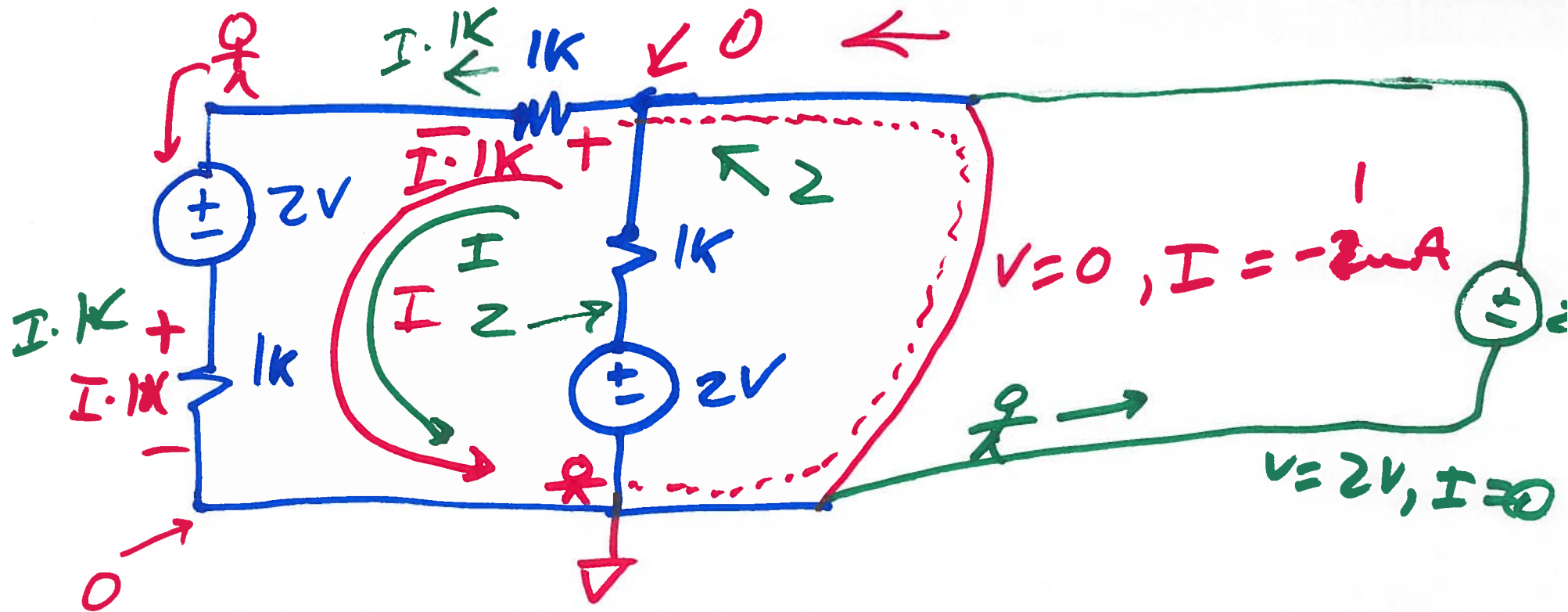


2)





4)



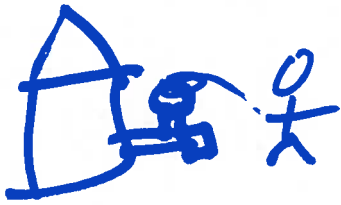
$$-I \cdot 1k - 2V - I \cdot 1k = 0$$

$$I = -\frac{1}{2} \text{mA}$$

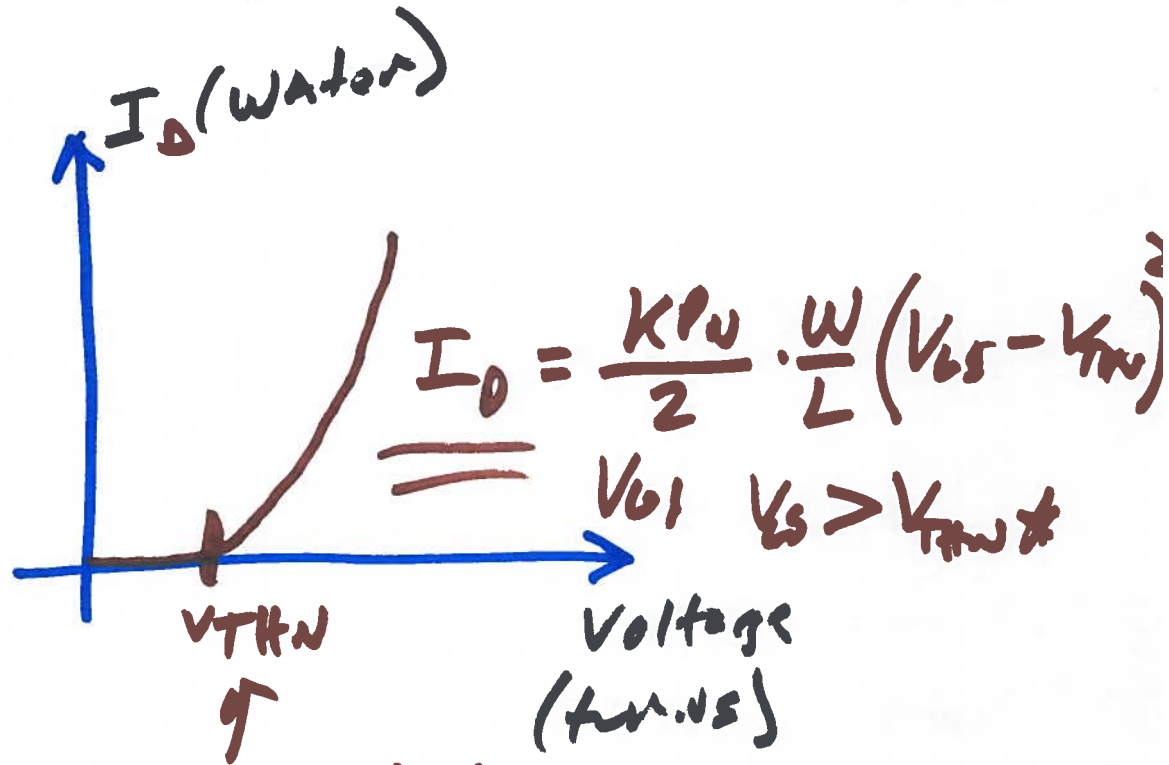
$$2V - I \cdot 1k - 2V - I \cdot 1k = 0$$

$$I = 0$$

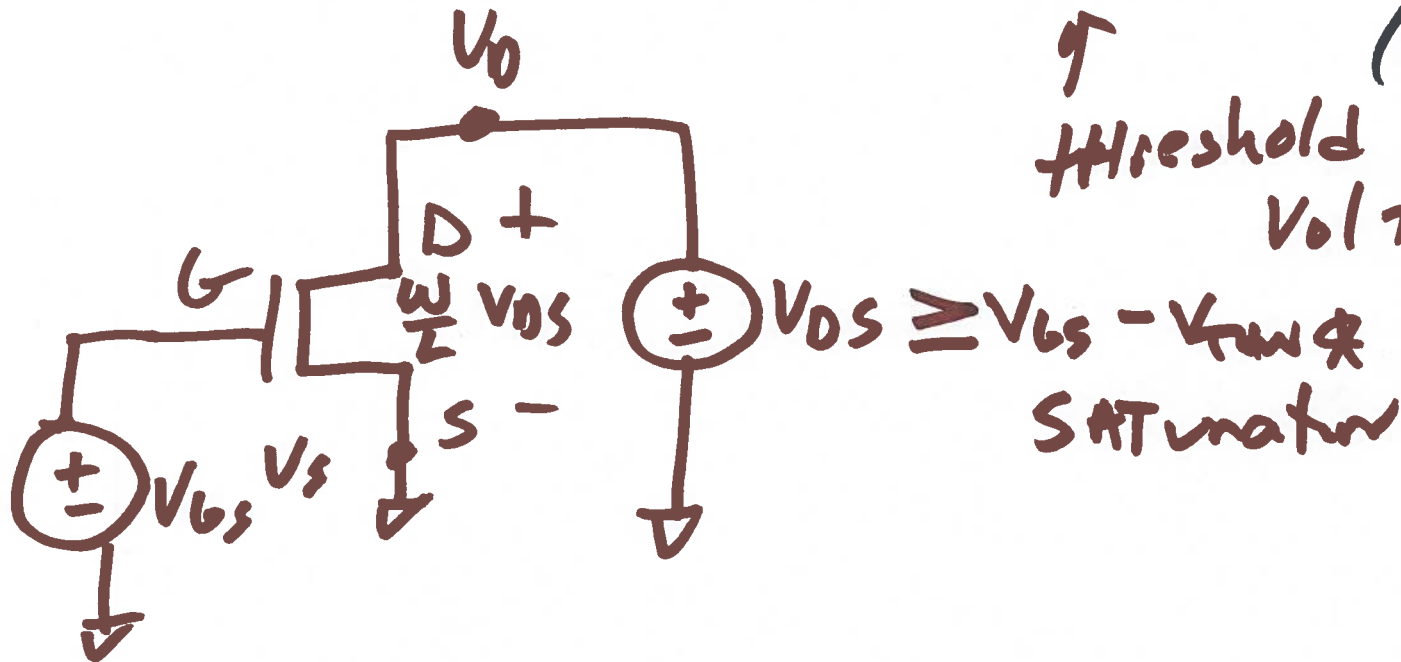


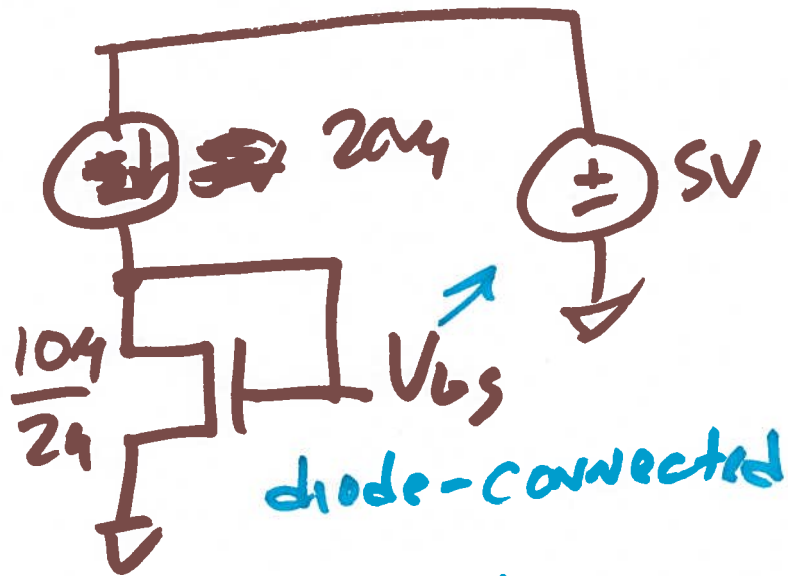


Hose b.b



Threshold Voltage





$$I_D = 20A$$

$$I_D = \frac{K_P N}{2} \frac{W}{L} (V_{GS} - V_{TH})^2$$

$$V_{GS} = \sqrt{\frac{2I_D}{K_P N \cdot \frac{W}{L}}} + V_{TH}$$

$$= \sqrt{\frac{2 \cdot 20A}{120A \cdot \frac{10}{2}}} + 0.8$$

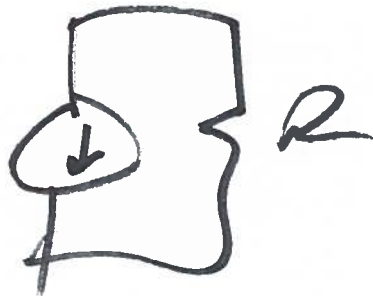
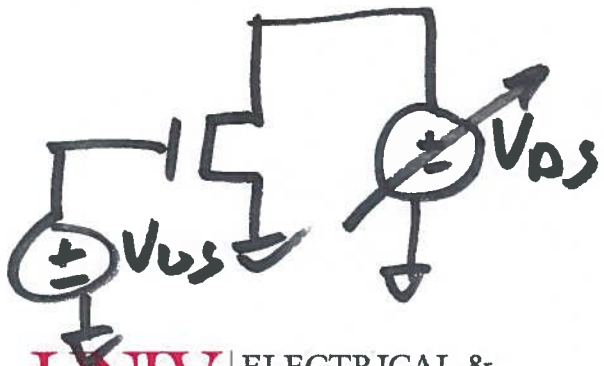
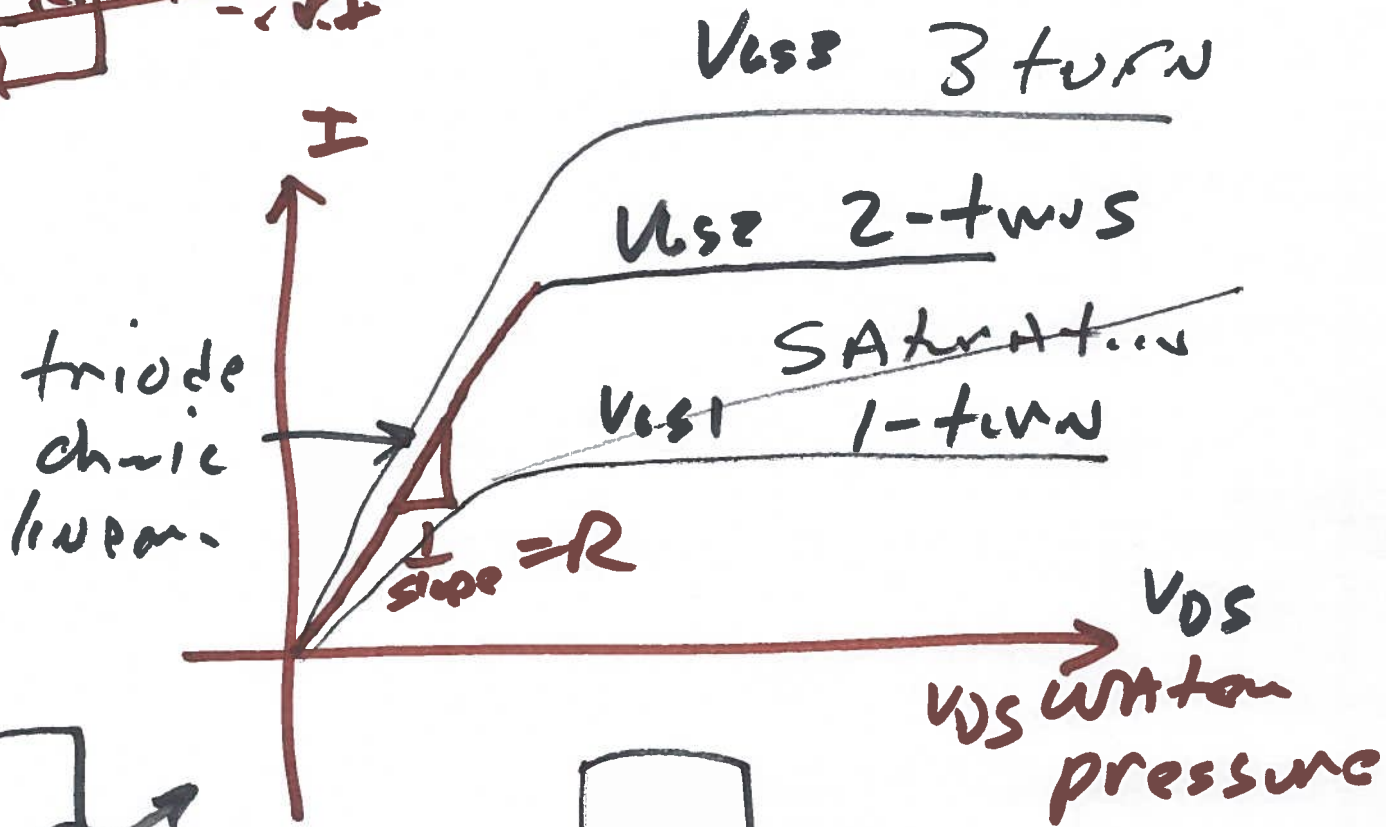
$$= \sqrt{\frac{40 \cdot 2}{10 \cdot \frac{120}{30}}} + .8$$

$$= \sqrt{\frac{2}{30}} + .8$$

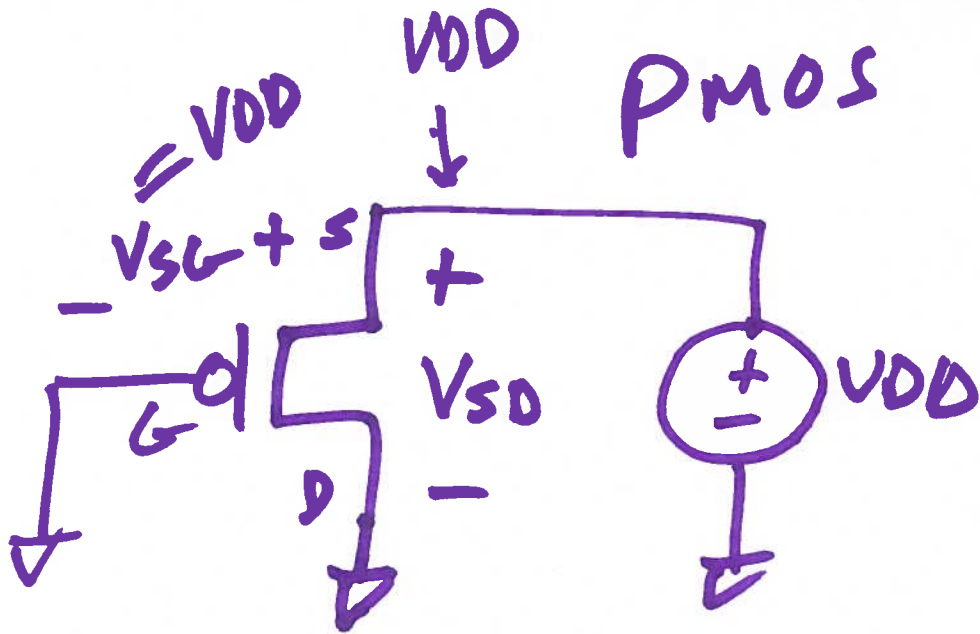
$$= \sqrt{.066V} + .8$$

$$1.058 =$$

$$.258$$

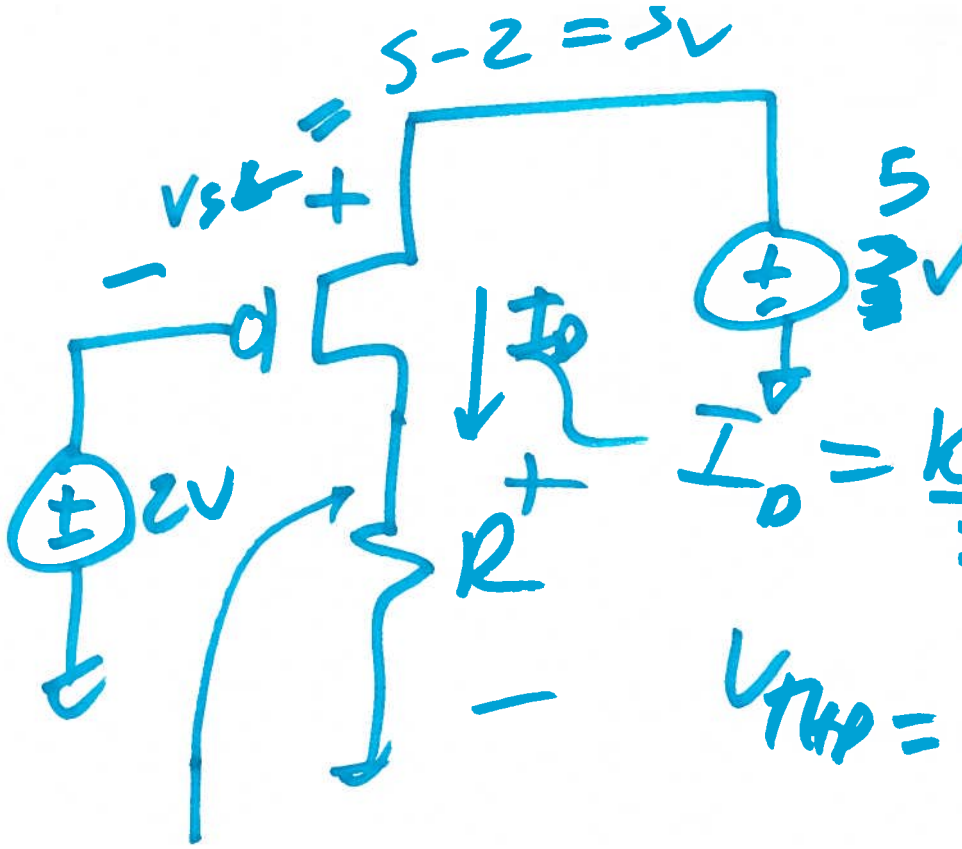






$$V_{SG} = V_S - V_G$$

$$I_D = \frac{k_{pp}}{2} \cdot \frac{W}{L} (V_{SG} - V_{THD})^2$$



$$I_D = \frac{K_{DP}}{2} \frac{W}{L} (3 - 0.9)^2$$

$$V_{THP} = 0.9$$

$$I_D \cdot R$$