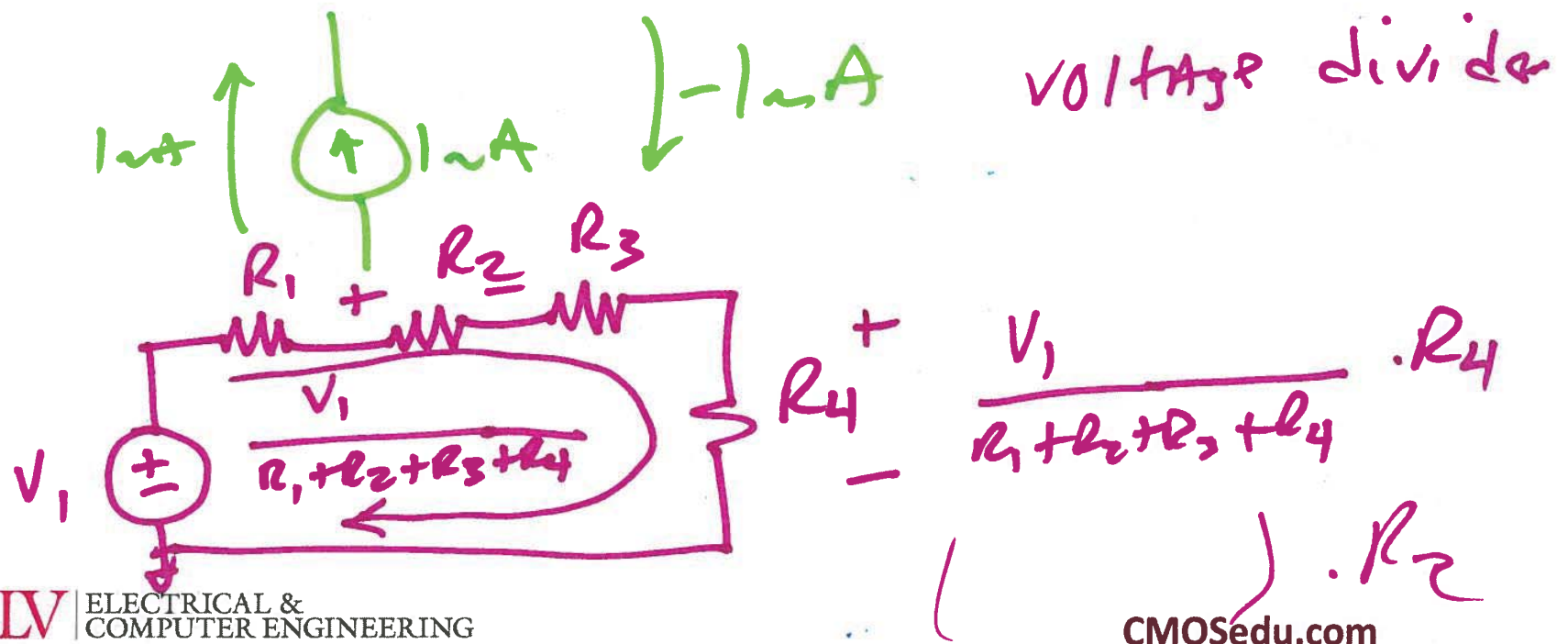


EE 220

Circuits I

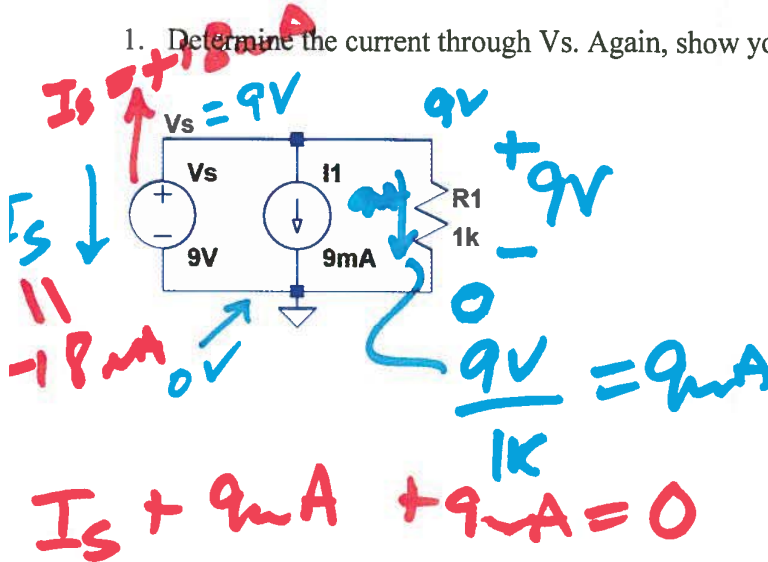
Lecture 6



Closed book and notes.

Show your work for credit and place a box around each of your answers.

1. Determine the current through V_s . Again, show your work for credit. (2 points)



Handwritten calculations for problem 1:

$$I \downarrow \uparrow V = IR$$

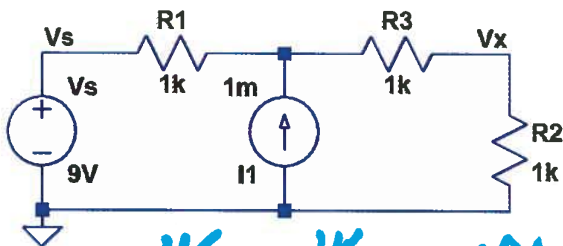
$$I = \frac{V}{R}$$

$$V = 9 - (-1) = 10\text{V}$$

$$V_T = 3.33\text{V}$$

$$V_X = 9 \cdot \frac{1\text{k}}{1\text{k} + 2\text{k}} = 3\text{V}$$

2. Find V_x in the following circuit. (5 points)



Handwritten calculations for problem 2:

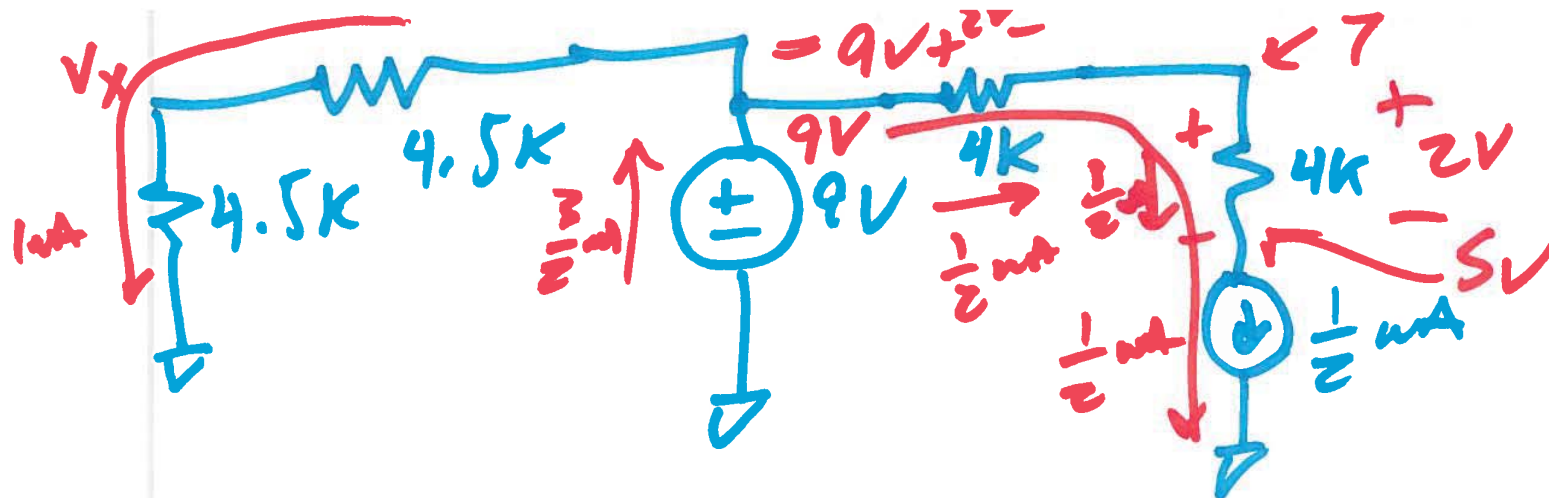
$$2\text{k} \parallel 1\text{k} = \frac{1\text{k} \cdot 2\text{k}}{1\text{k} + 2\text{k}}$$

$$V_X = 3.33 = 666\Omega$$

$$0.666\text{V} = 666\mu\text{V}$$

$$1\text{k} + 666 = 1666$$

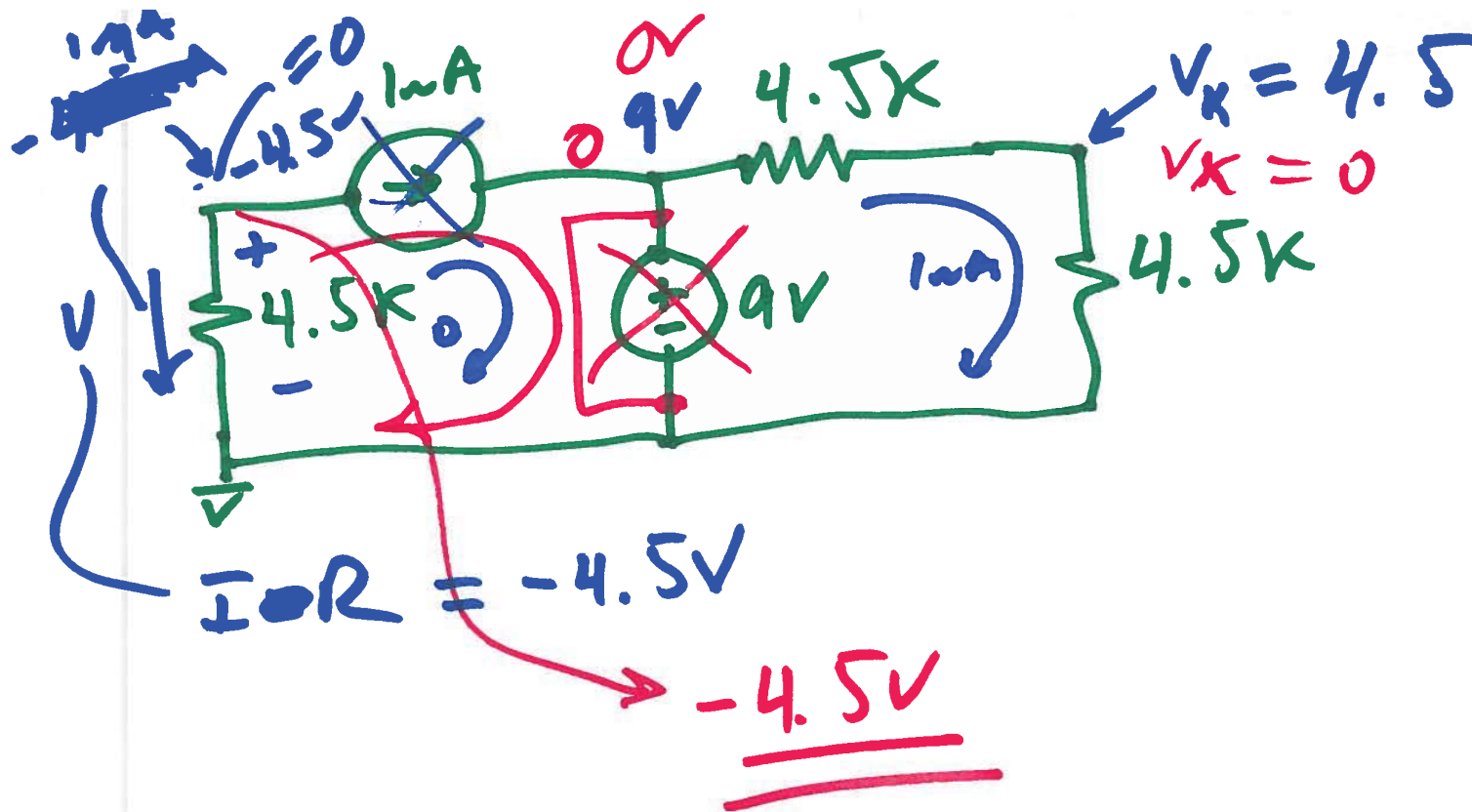
$$1\text{mA}$$

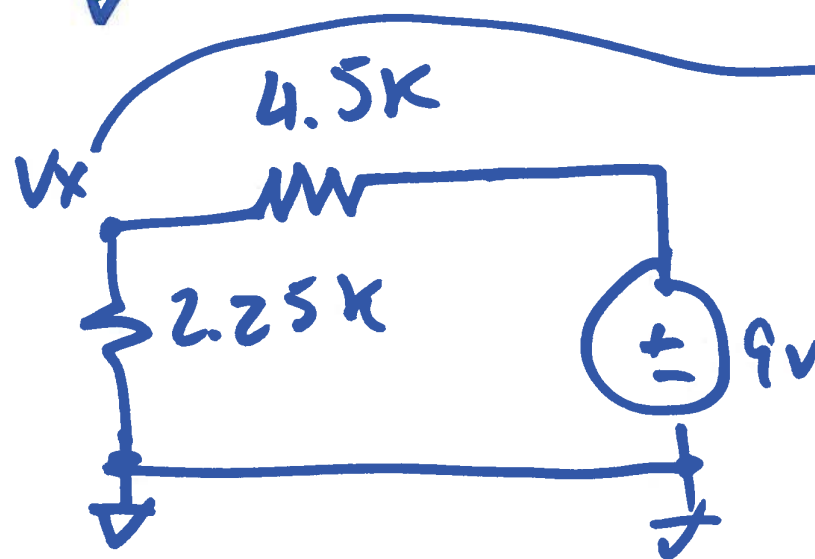
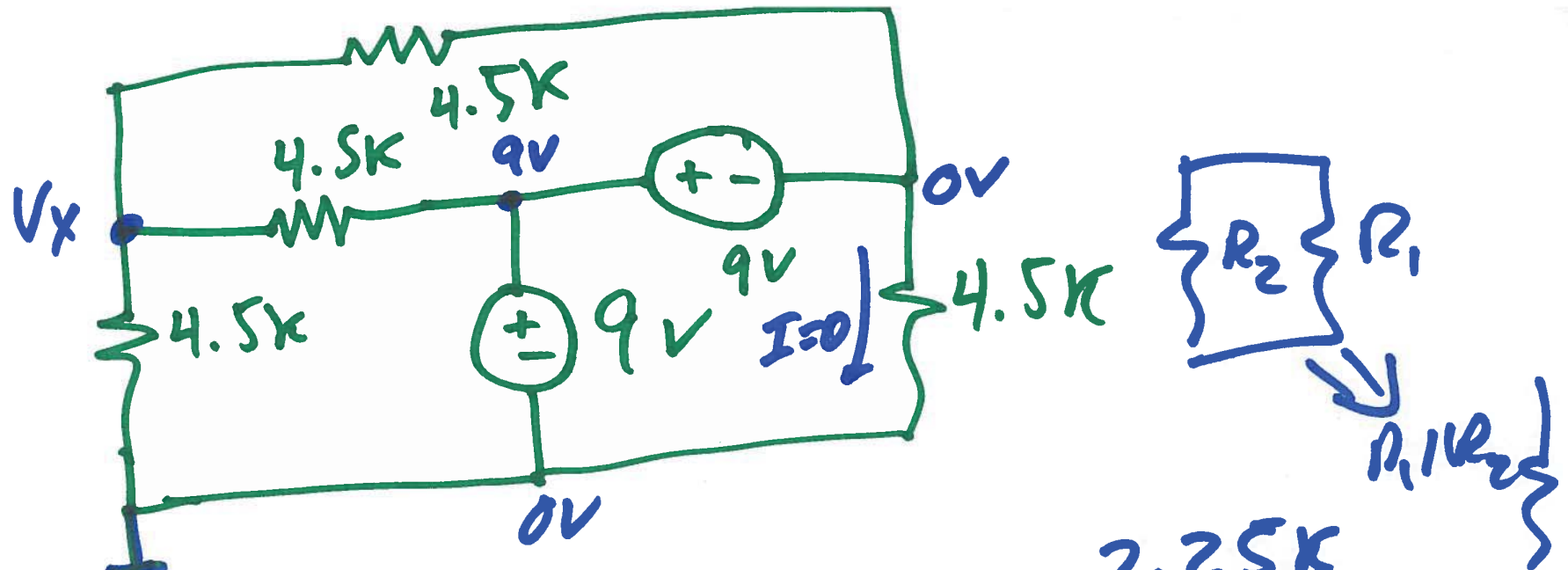


$$V_x = 9 \cdot \frac{4.5k}{4.5k + 4.5k} = 9 \cdot \frac{1}{2}$$

$$= \underline{\underline{4.5V}}$$

2)

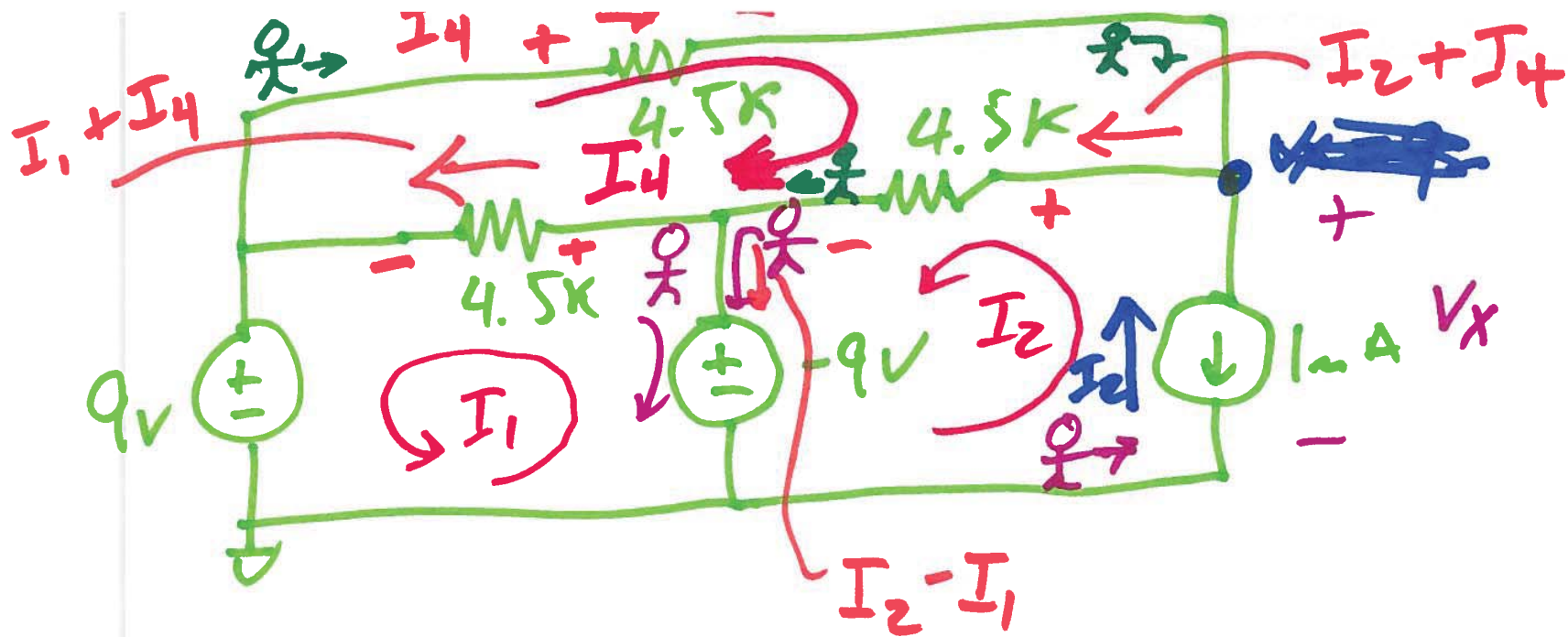




$$V_x = 9 \cdot \frac{2.25k}{4.5k + 2.25k}$$

$$= 9 \cdot \frac{1}{3} = \underline{\underline{3V}}$$

5)



$$-I_4 \cdot 4.5k - (I_2 + I_4) \cdot 4.5k - (I_1 + I_4) \cdot 4.5k = 0$$

$$V_x - (I_2 + I_4) \cdot 4.5k - (-9V) = 0$$

$$-(-9) + 9 + 4.5k(I_1 + I_4) = 0$$

$$I_2 = -1mA$$