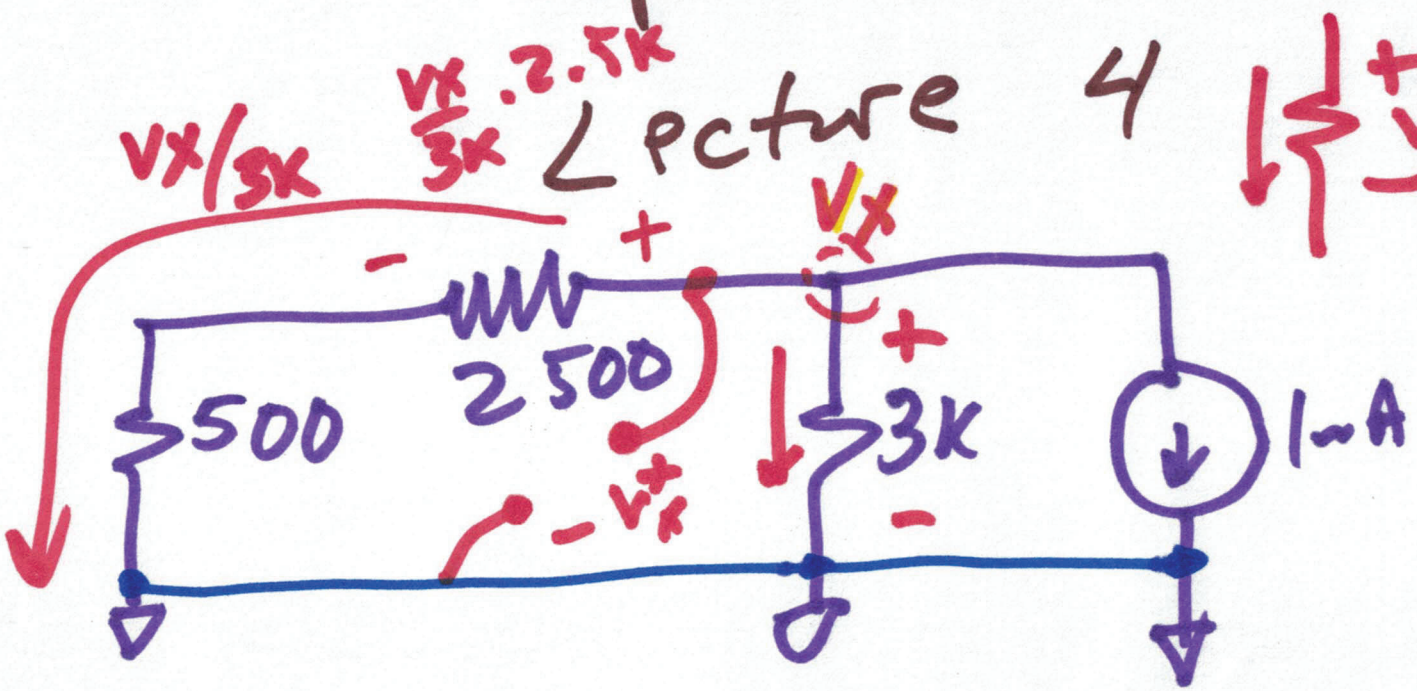
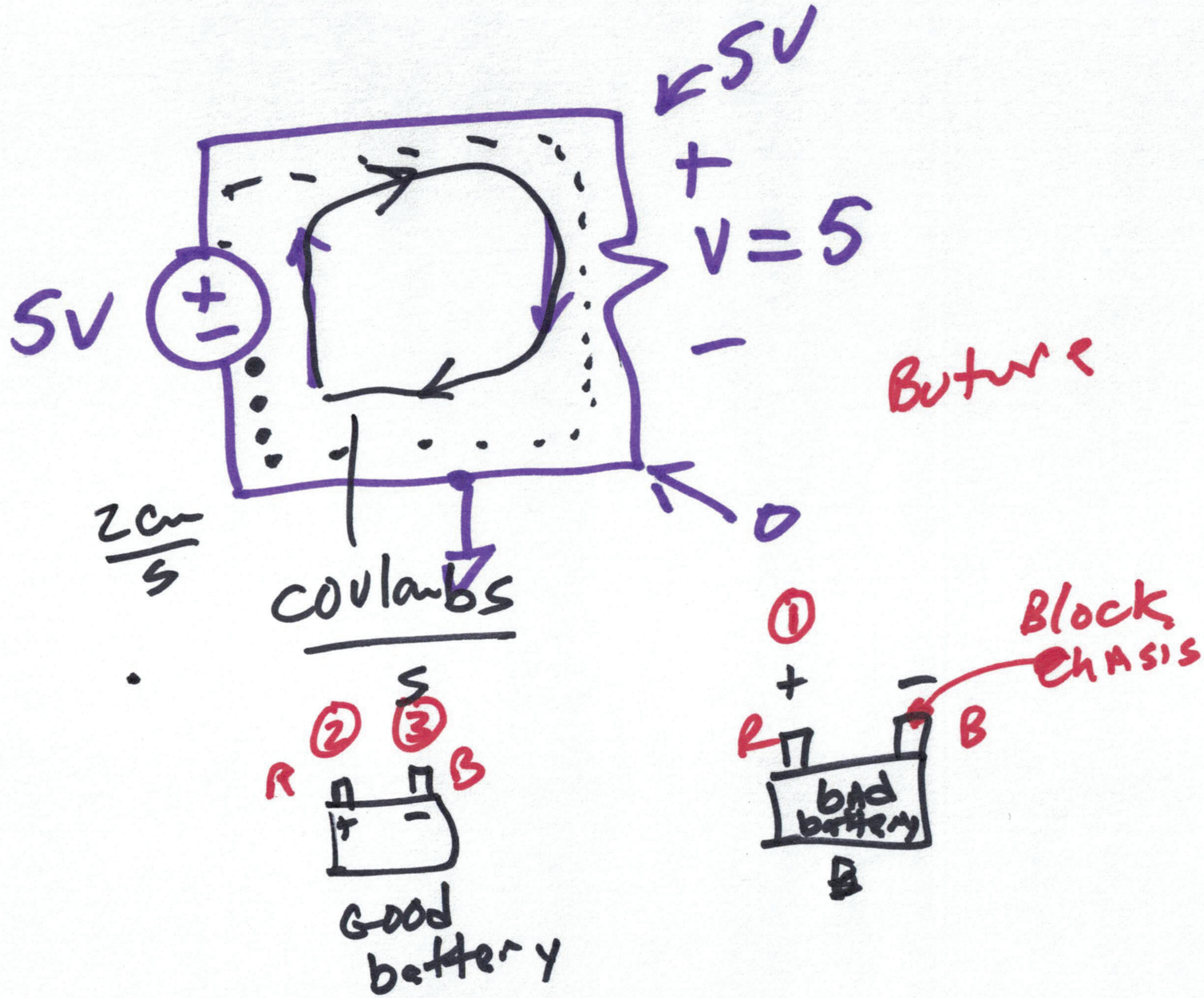
EE 220
Circuits I
September 11, 2023
Lecture 4

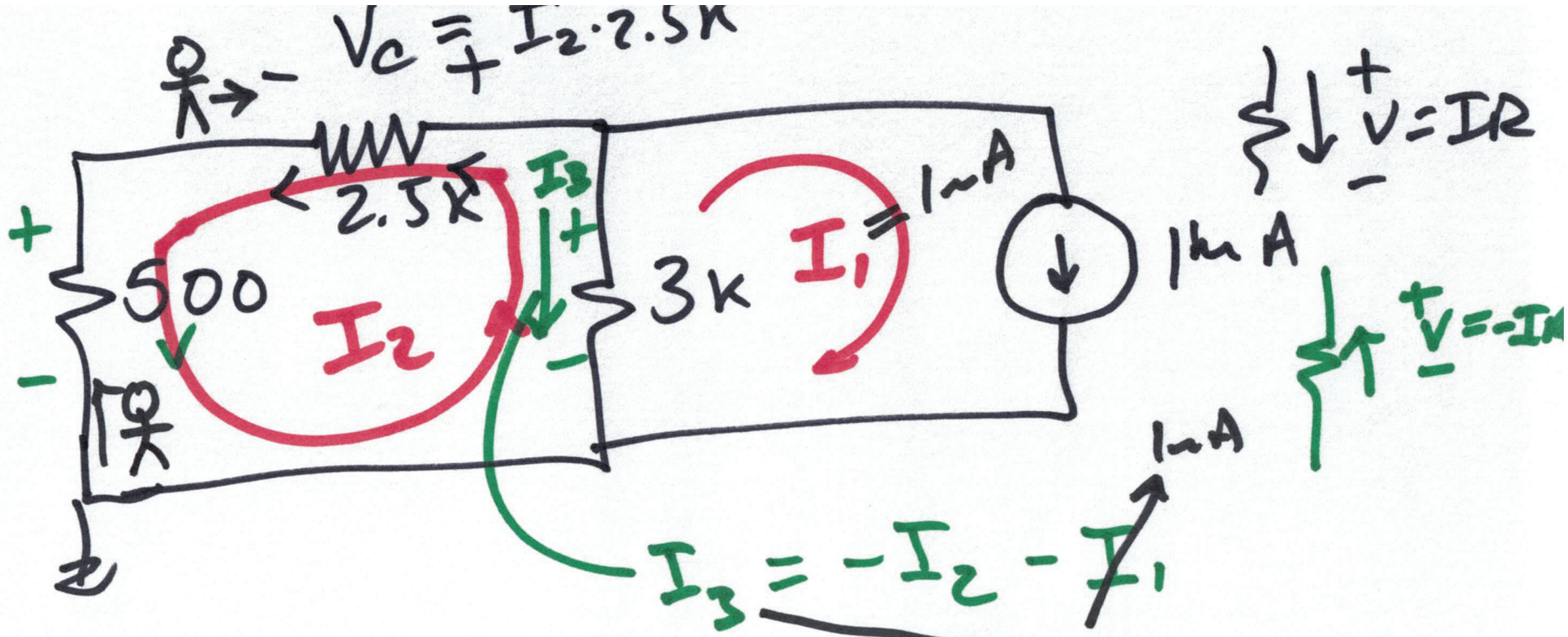
$1-A+\frac{V_x}{3k}+\frac{V_x}{3k}=0$

$\frac{V_x}{3k} \cdot 2.5k$

$V_x/3k$




5V
5V
+
V=5
−
0
2cm/s
coulombs/s
Buture
① + − R B
Block chasis
bad battery
② ③ R B
good battery



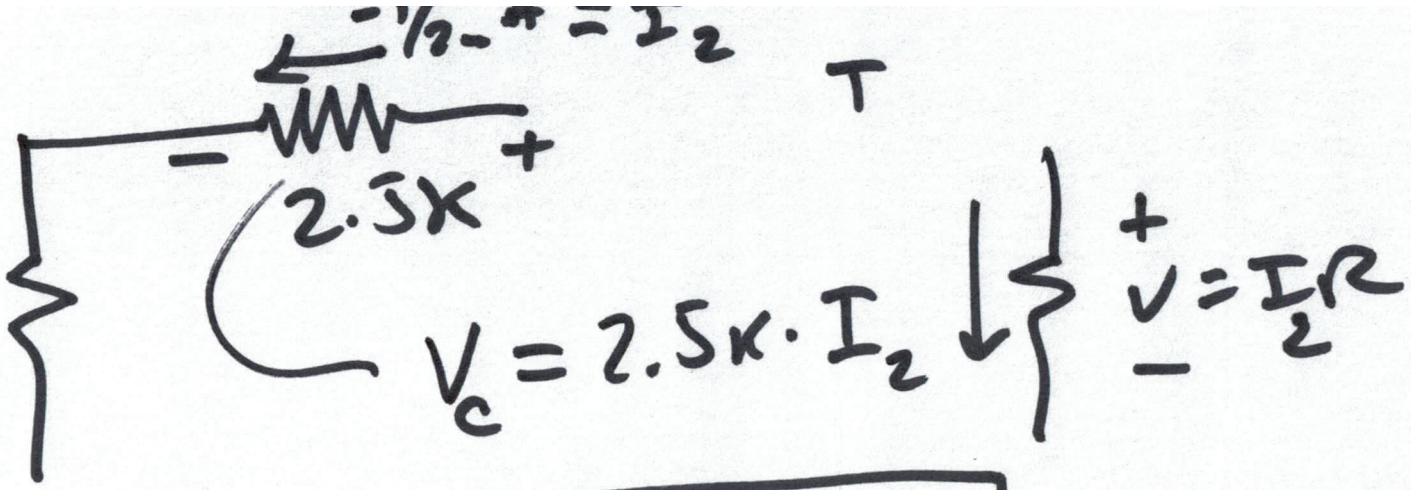
$$+500I_2 + 2.5kI_2 - 3kI_3 = 0$$

$$500I_2 + 2.5kI_2 - 3k(-I_2 - 1mA) = 0$$

$$3000I_2 + 3000I_2 + 3V = 0$$

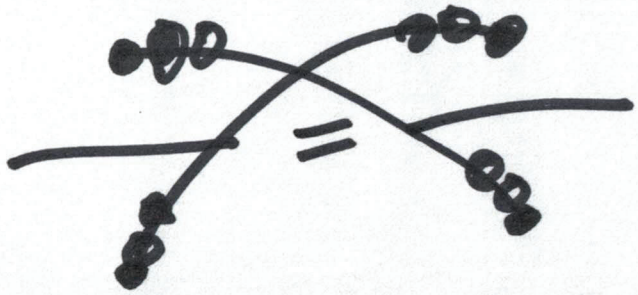
$$I_2 = \frac{-3}{6000} = -\frac{1}{2}mA$$

3)



$$V_c = -1.25\,V$$

$$\frac{5ABX}{(X+5)C} = \frac{C\cdot(A+1)}{D\cdot(X+3)}, \quad D = \frac{(X+5)C\cdot C(A+1)}{5ABX(X+3)}$$



Superposition

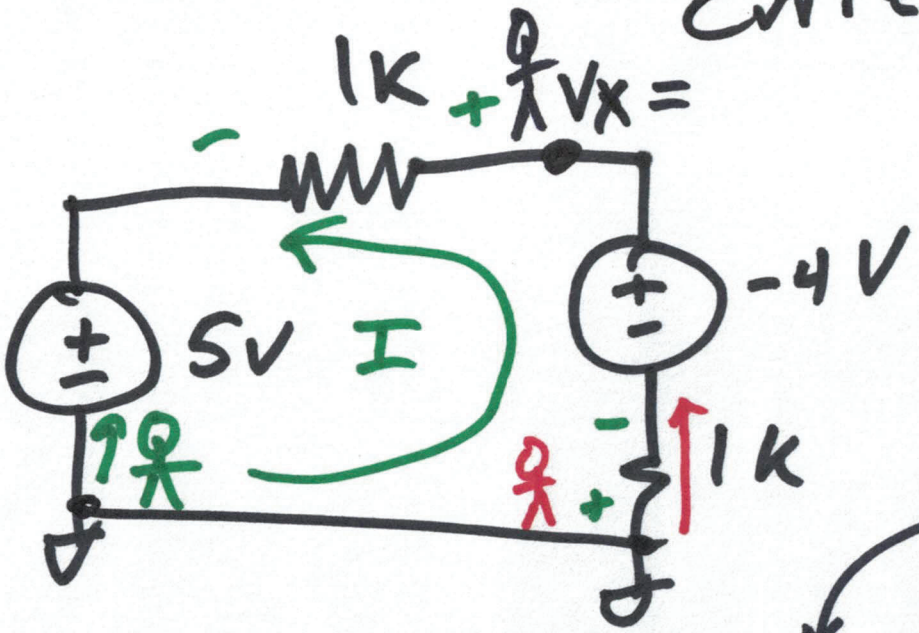
$= 10^{-3} = \frac{1}{X} = \frac{1}{10^3}$

Look one source at at a time

voltage sources → wire (short

current → open

KVL



$+5V + 1K\,I - (-4) + 1K \cdot I = 0$

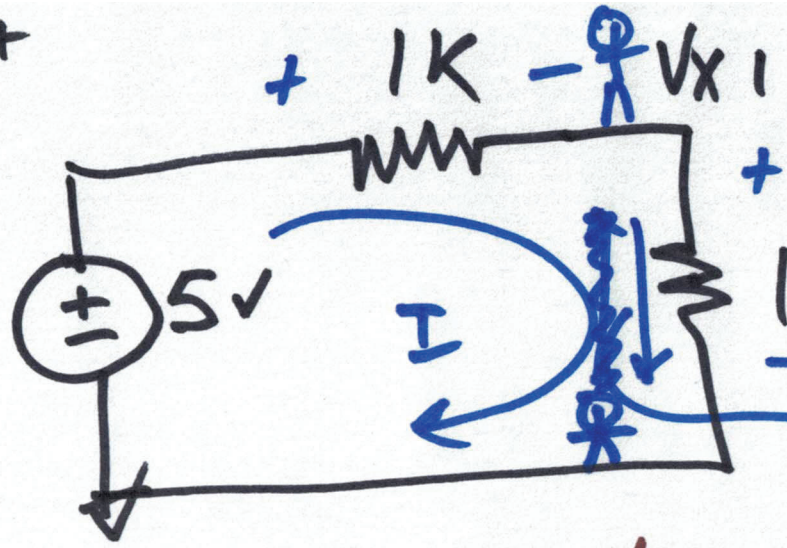
$\frac{2K}{1} I = \frac{-9}{1}$

$I = -4.5\ mA$

$-I\,1K + (-4V) = Vx$

$\frac{1}{2}V = 4.5V - 4 = Vx$

1st



$5 - 1kI - 1kI = 0$

$I = 2.5mA$

$V_{x1} = +1k \cdot 2.5mA$

$V_{x1} = 2.5V$

$-1k\,2.5mA = V_{x2}$

$V_{x2} = -2V$

$V_{x1} = 2.5V$

$+1k \cdot I + (-4V) + 1kI = 0$

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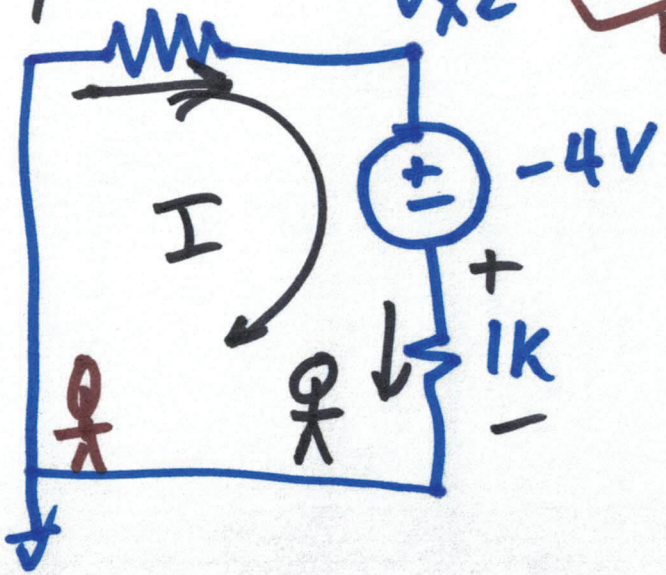

$2kI = 4$

$I = \frac{4}{2x} = 2mA$

$V_x = V_{x1} + V_{x2}$

$= -2 + 2.5$

$V_x = 1/2V$