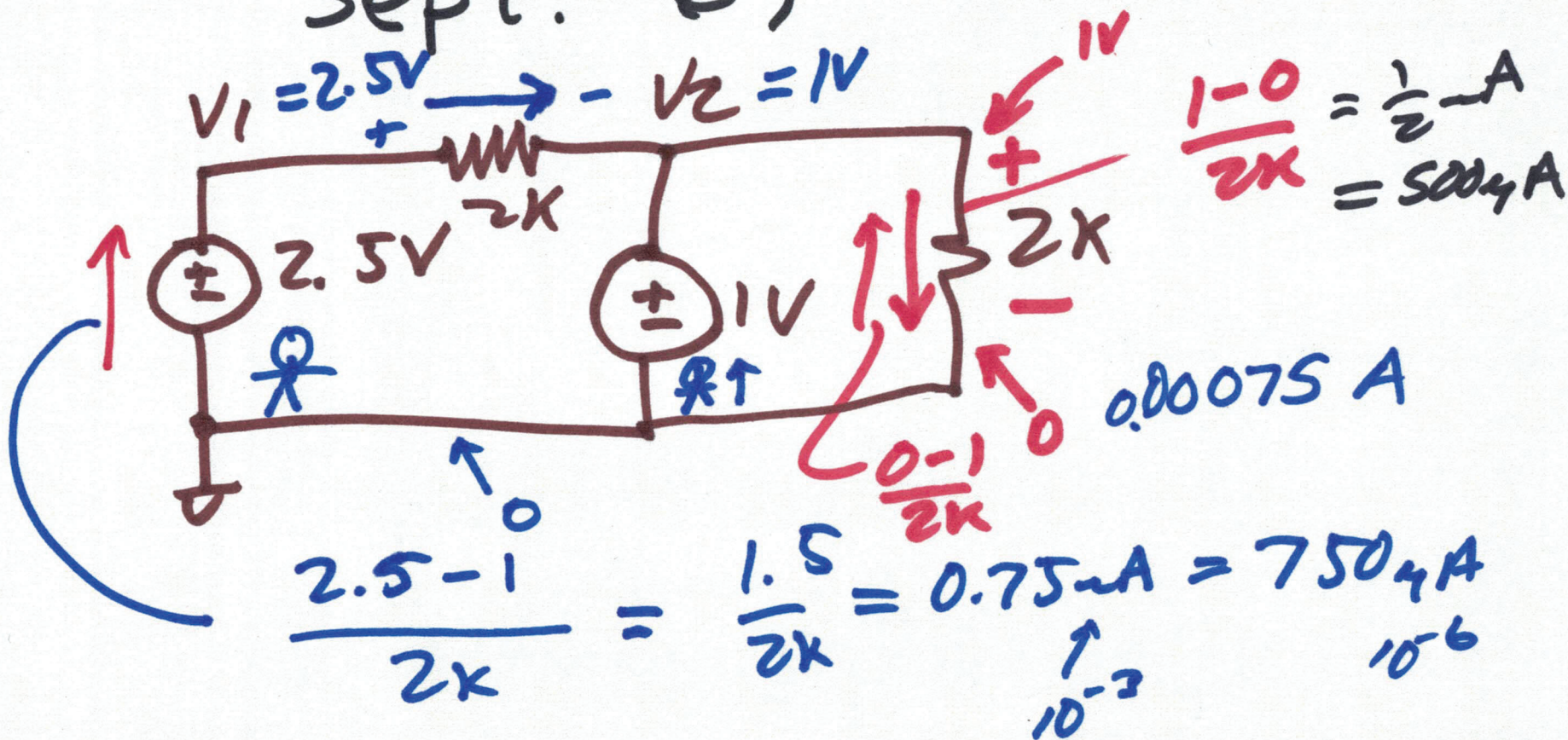
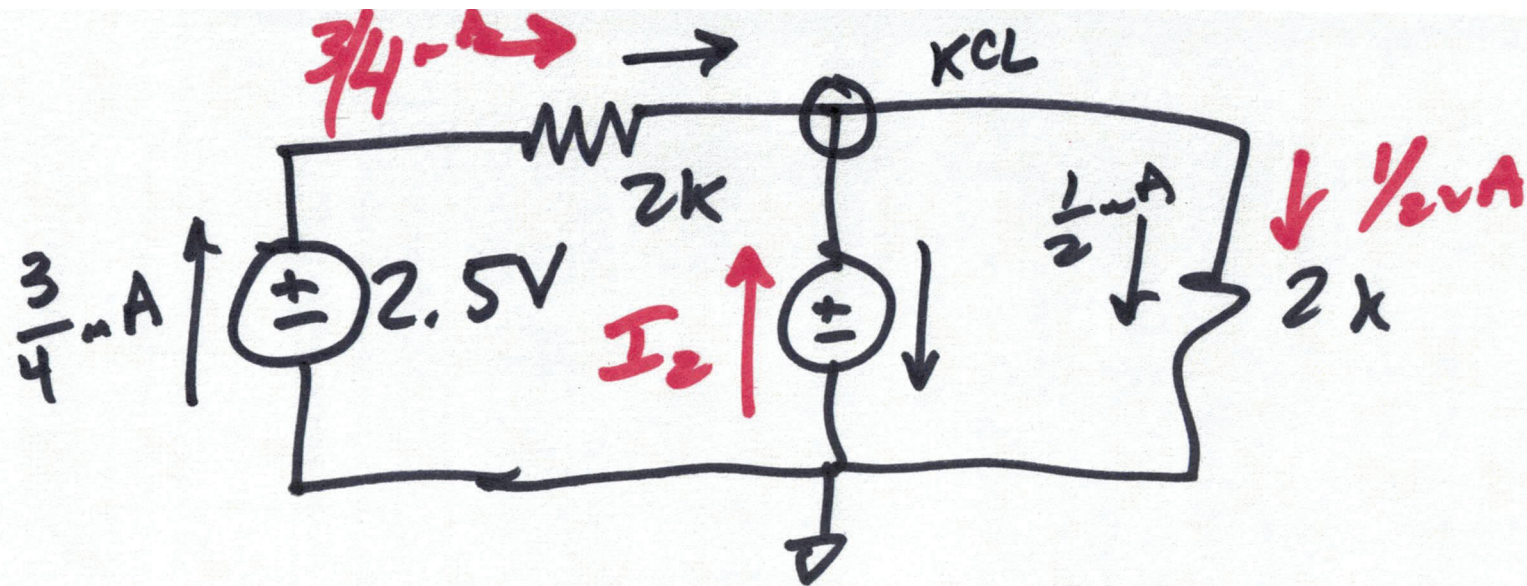


EE 220 CIRCUITS I

Lecture 3

Sept. 6, 2023



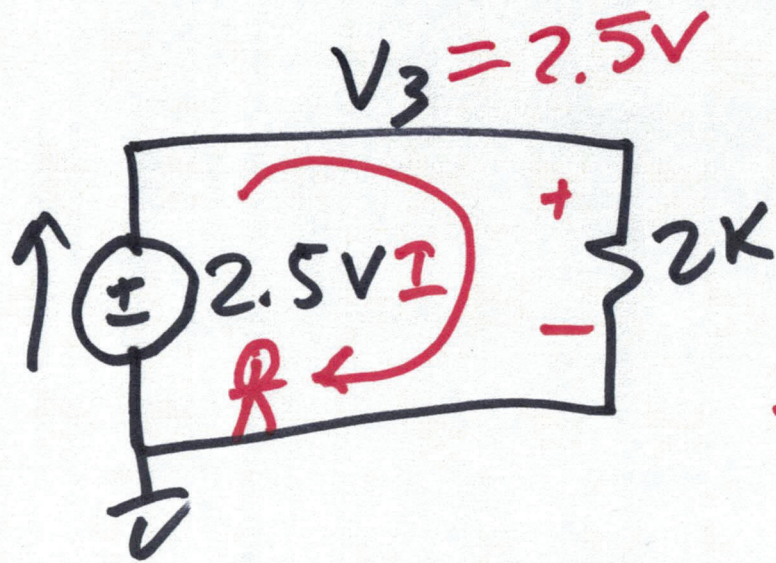


$$\frac{3}{4} \text{ mA} = I + \frac{1}{2} \text{ mA}$$

$$I = \frac{1}{4} \text{ mA}$$

$$I_2 + \frac{3}{4} \text{ mA} = \frac{1}{2} \text{ mA}$$

$$I_2 = -\frac{1}{4} \text{ mA}$$

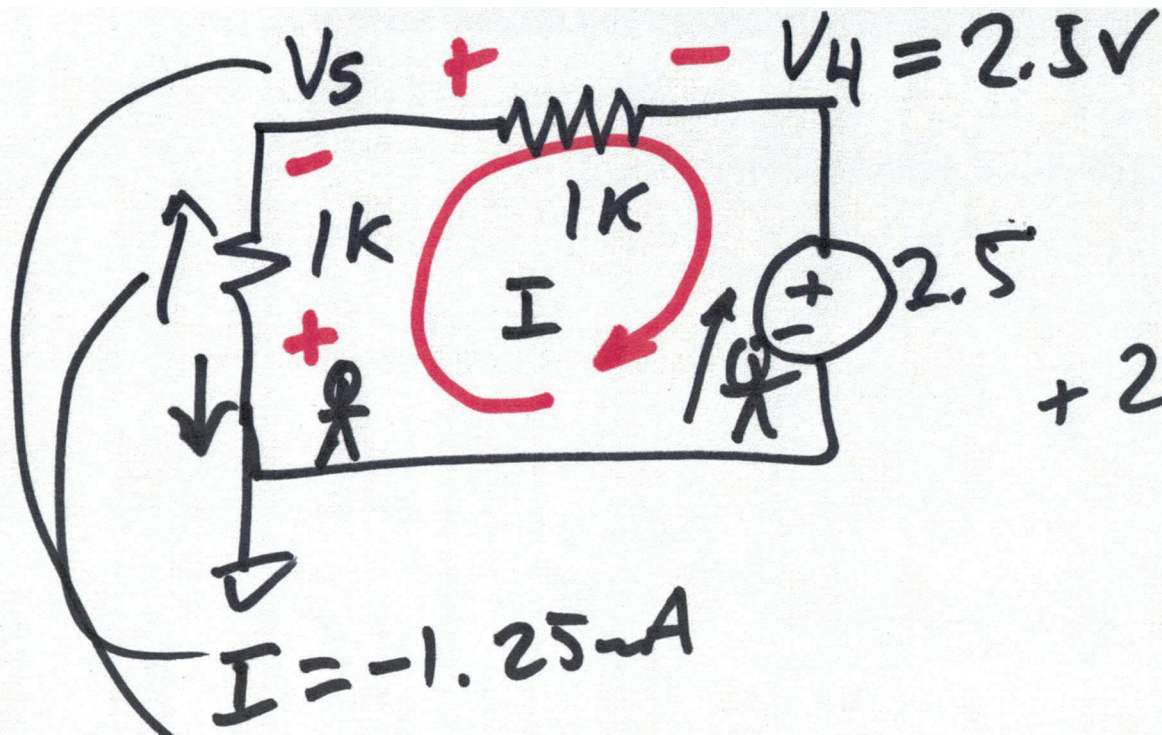


$$+2kI - 2.5 = 0$$

$$2kI = 2.5$$

$$I = \frac{2.5}{2k}$$

$$I = 1.25 \mu A$$



$$V = IR$$

$$+ 2.5 + I1K + I1K = 0$$

$$2KI = -2.5$$

$$I = \frac{-2.5}{2K} = \frac{-1.25}{1K}$$

$$= -1.25 \mu A$$

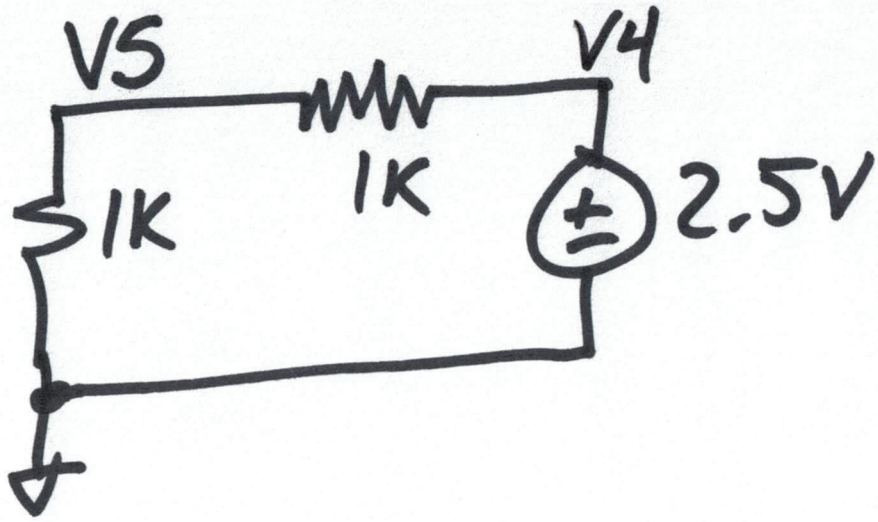
\uparrow
 10^{-6}

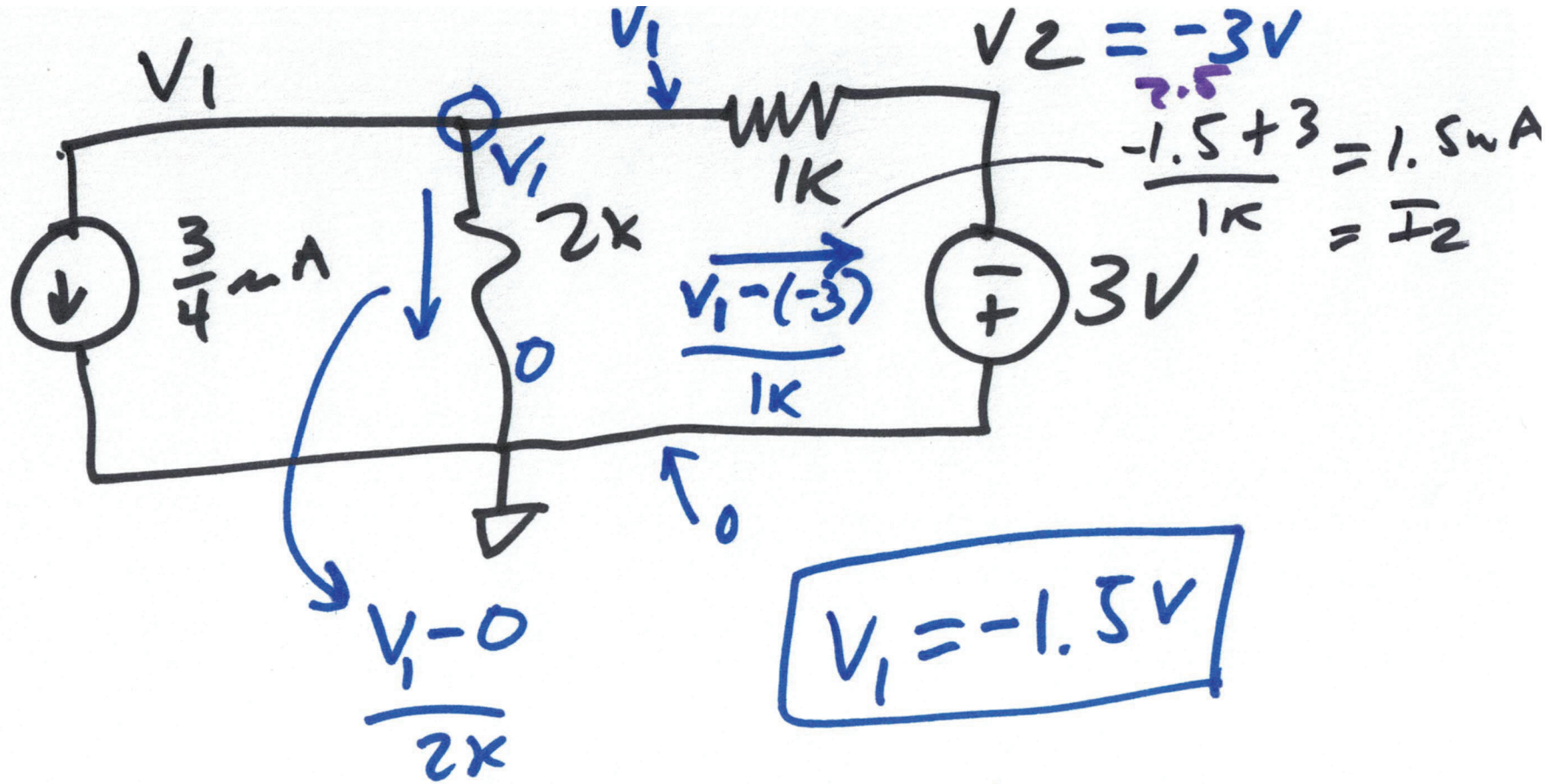
$$I = -1.25 \mu A$$

$$V_S = -1K(-1.25 \mu A)$$

$$V_S = 1.25V$$

4)





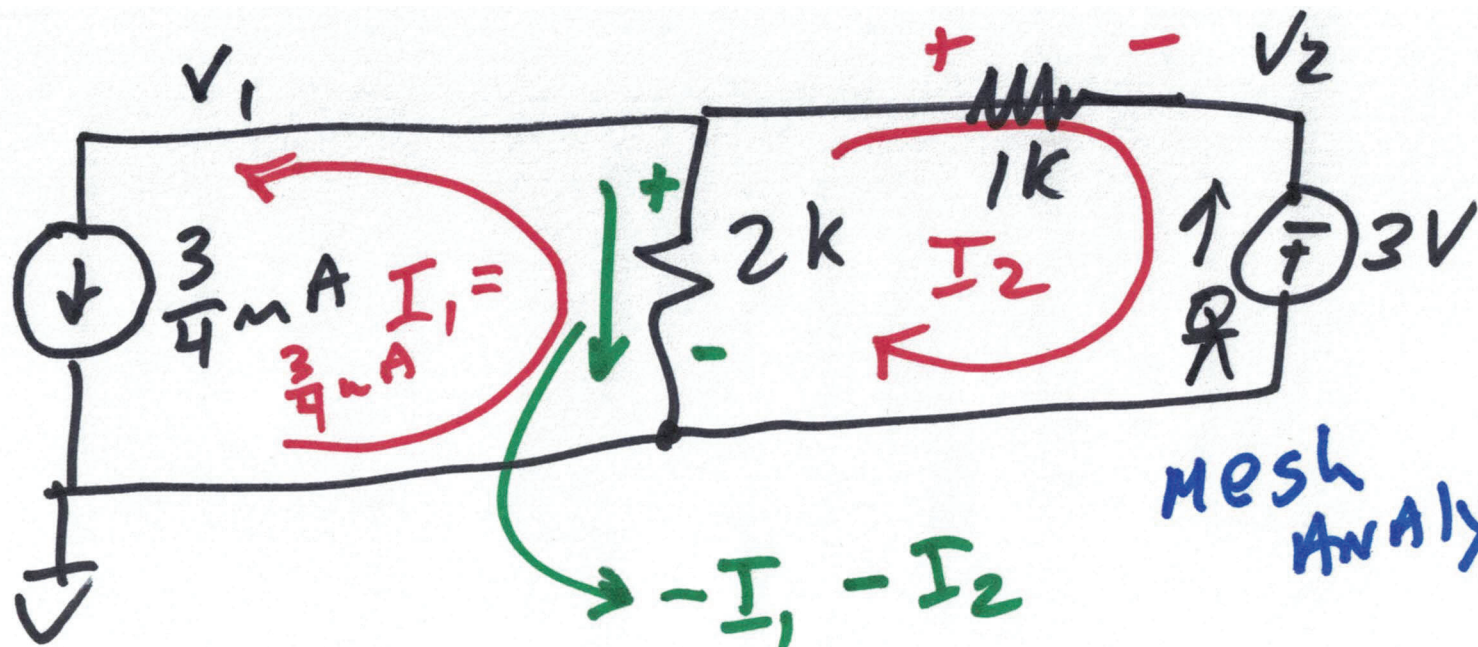
$$2k \left(\frac{3}{4} \mu A + \frac{V_1}{2k} + \frac{V_1 + 3}{1k} \right) = (0) 2k$$

$$1.5V + V_1 + 2V_1 + 6 = 0$$

$$3V_1 = -4.5 - 7.5$$

$$V_1 = -1.5V$$

6)



$$I_1 = \frac{3}{4} \text{ mA}$$

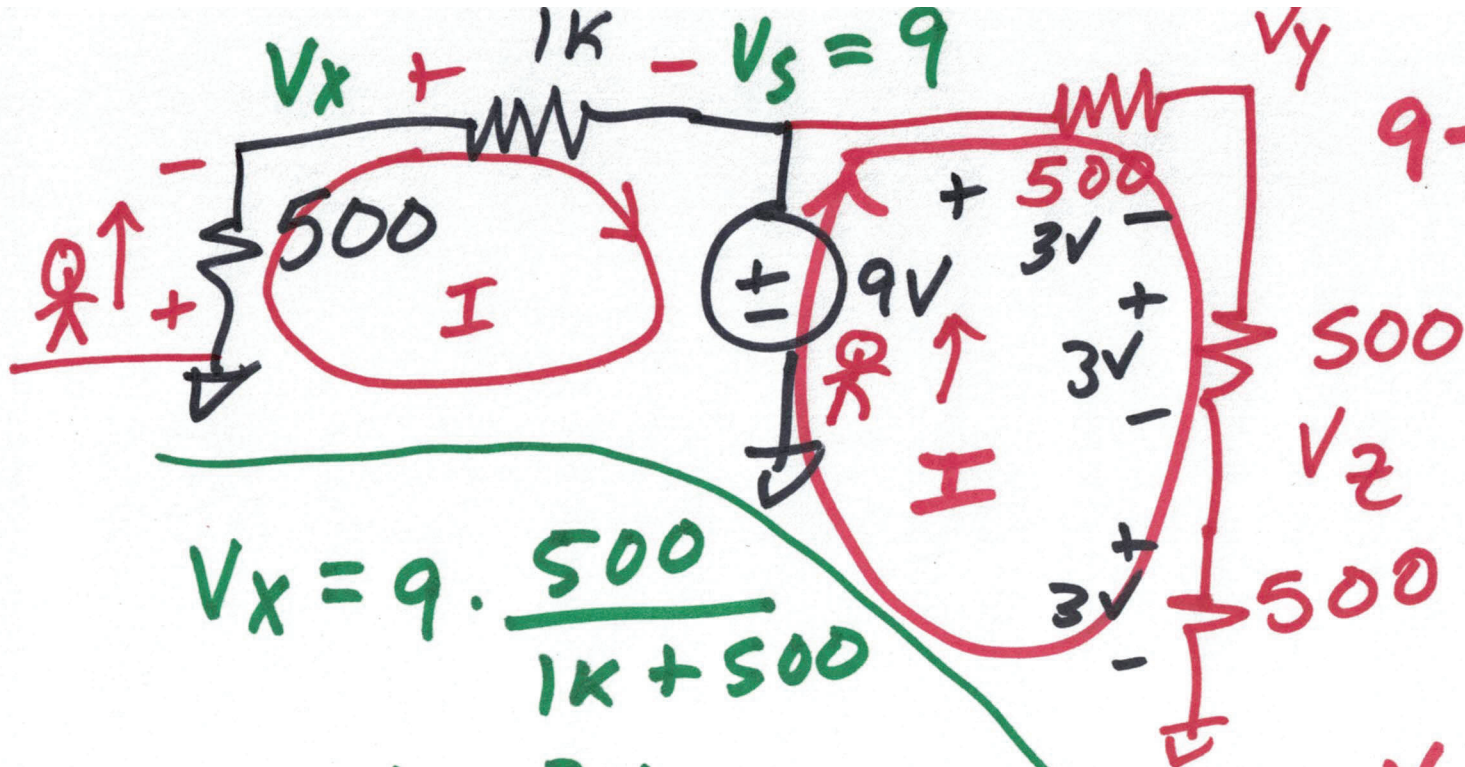
$$-3V + 1kI_2 - 2k(-I_1 - I_2) = 0$$

$$-3 + 1kI_2 + \underbrace{2kI_1}_{2k \cdot \frac{3}{4} \text{ mA}} + 2kI_2 = 0$$

$$= 1.5V$$

$$-1.5 + 3kI_2 = 0$$

$$I_2 = \frac{1.5}{3k} = \frac{1}{2} \text{ mA}$$



$$9 - 500I - 500 \cdot I - 500 \cdot I = 0$$

$$I = \frac{9}{1.5k}$$

$$V_z = I \cdot 500$$

$$V_y = I \cdot 500 + I \cdot 500$$

$$= I \cdot 500 + V_z$$

$$V_x = 9 \cdot \frac{500}{1k + 500}$$

$$V_x = 3V$$

$$+9V + 1kI + 500I = 0$$

$$-9 = 1500I$$

$$I = \frac{-9}{1500}$$

$$V_x = -500 \cdot I = -500 \cdot \frac{-9}{1500} = 3V$$

8)