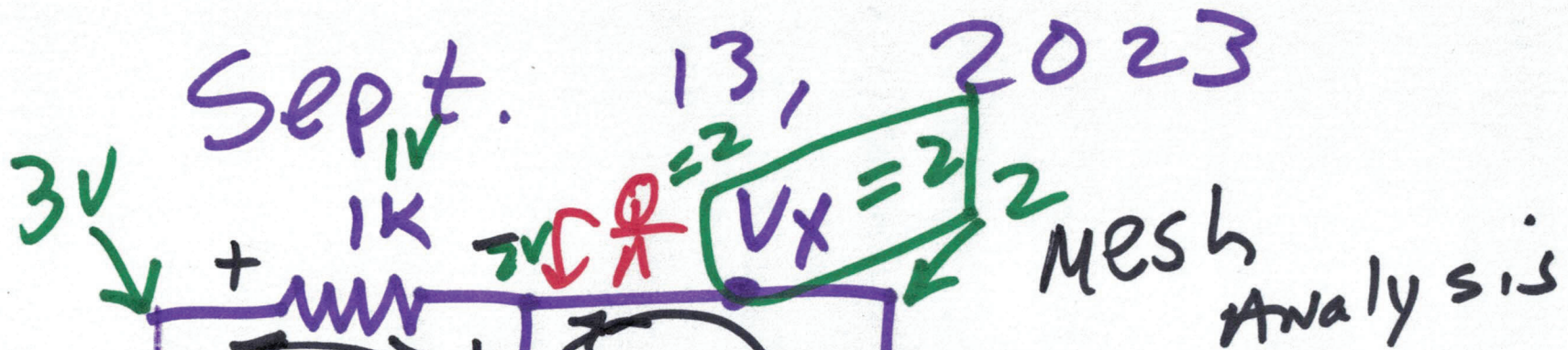


# EE 220 CIRCUITS I

## Lecture 5

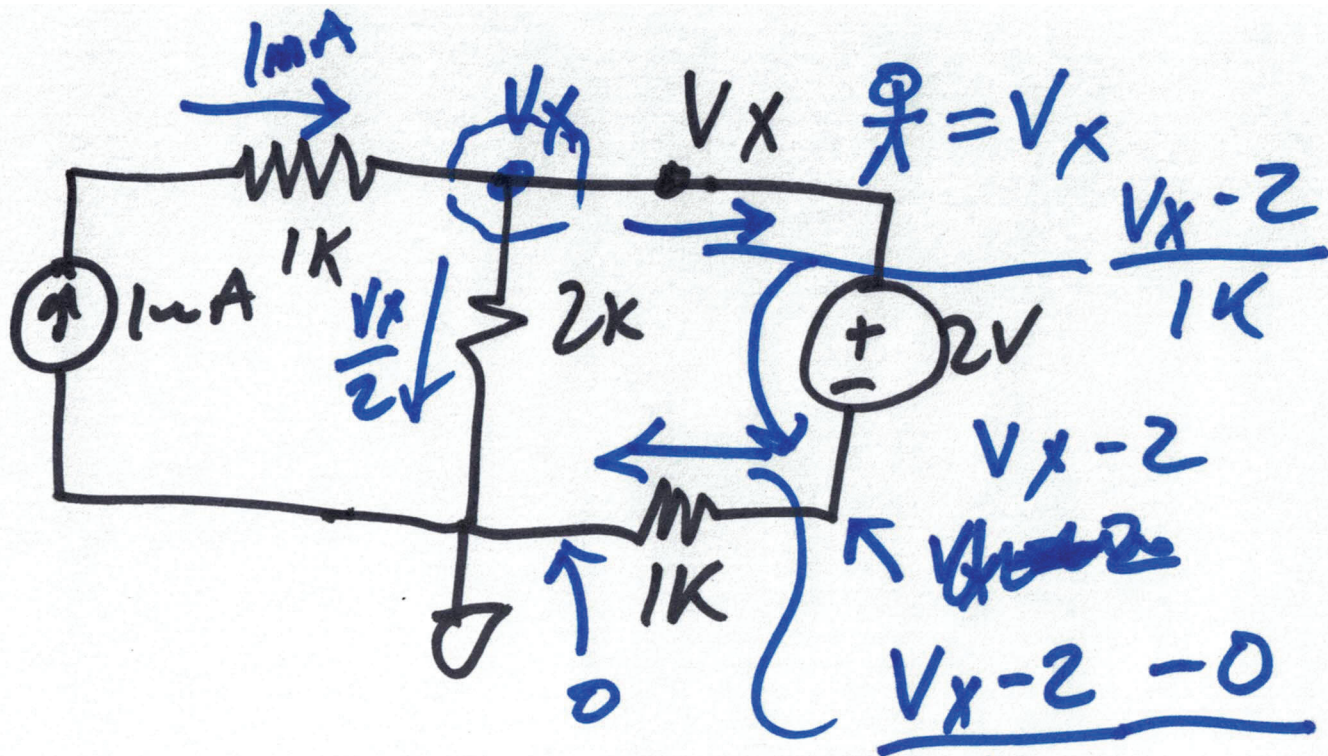
Sept. 13, 2023



$$-2k(1mA - I_1) + 1kI_1 + 2 = 0$$

$$I_2 = 1mA - I_1 \quad -2V + 2kI_1 + 1kI_1 + 2 = 0$$

$$I_1 = 0$$

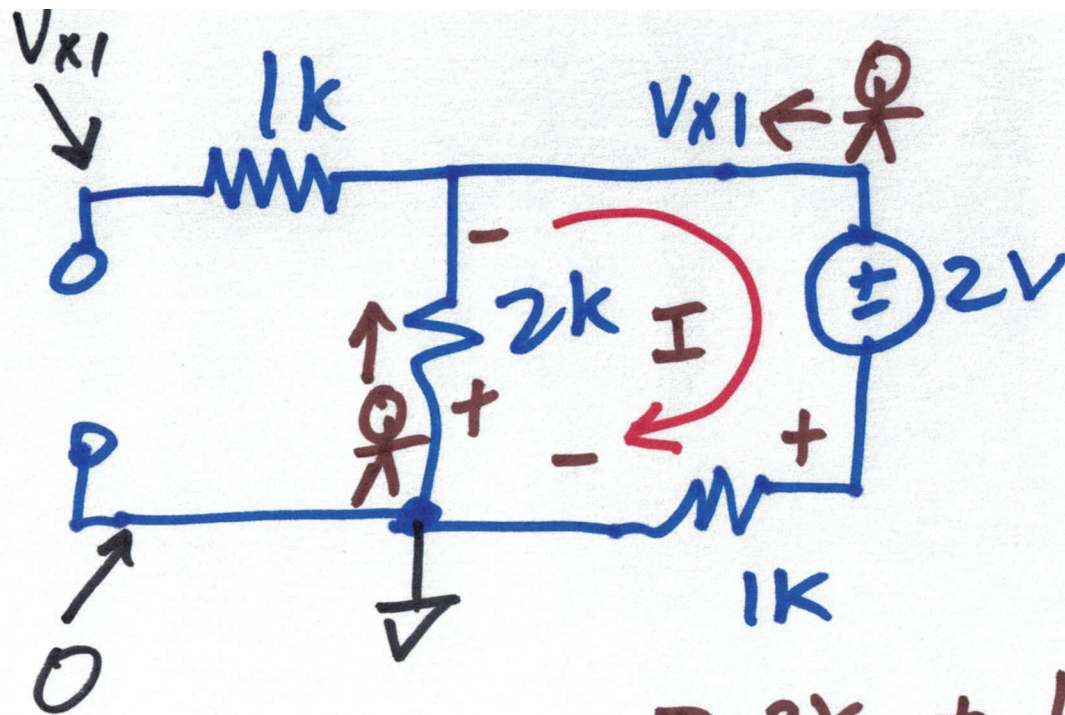


$$2k(1mA) = \left( \frac{V_x}{2k} + \frac{V_x - 2}{1k} \right) 2k$$

$$2V = V_x + 2V_x - 4V$$

$$6 = 3V_x$$

$$V_x = 2V$$



$$V = IR$$

$$\overbrace{\quad\quad\quad}^{\pm}$$

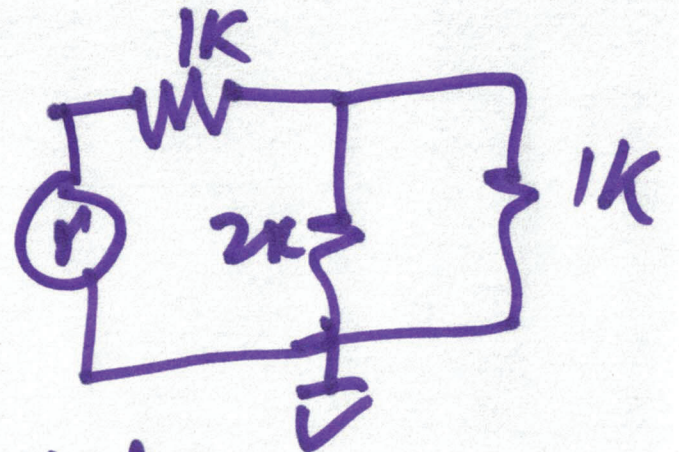
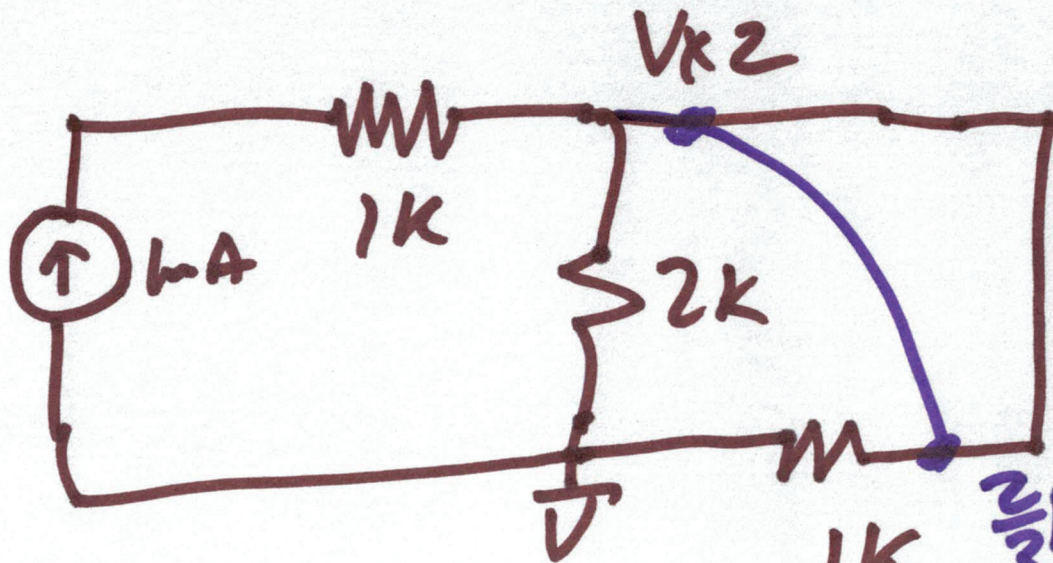
$$\rightarrow$$

$$I \cdot 2k + 1kI + 2 = 0$$

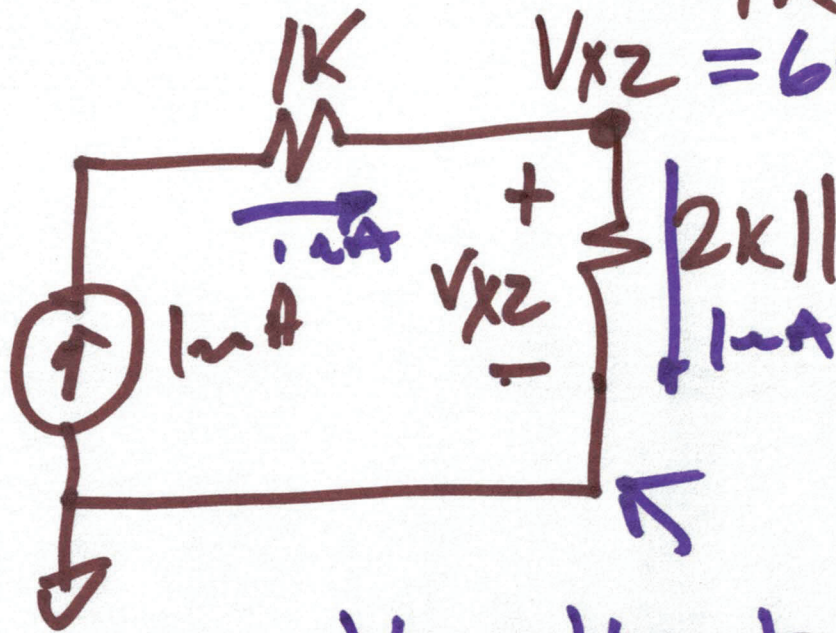
$$I = -\frac{2}{3} \text{ A}$$

$$V_{x1} = -2k \left( -\frac{2}{3} \text{ A} \right) = \frac{4}{3} \text{ V}$$

3)



$$V_{x2} = \frac{2k \cdot 1mA}{2k + 1k} = \frac{2}{3}V$$

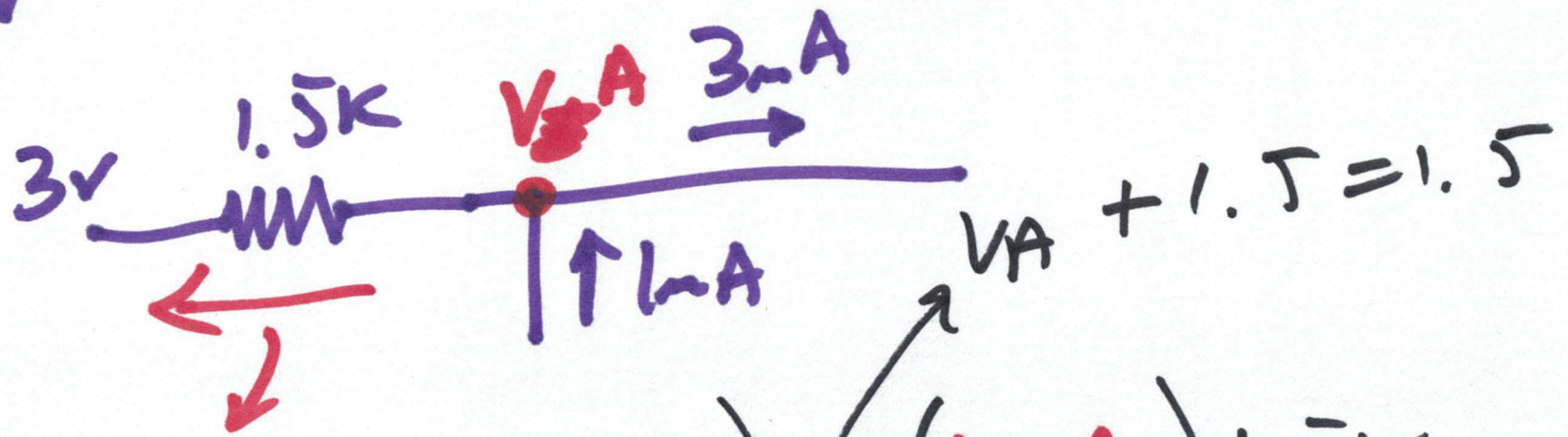
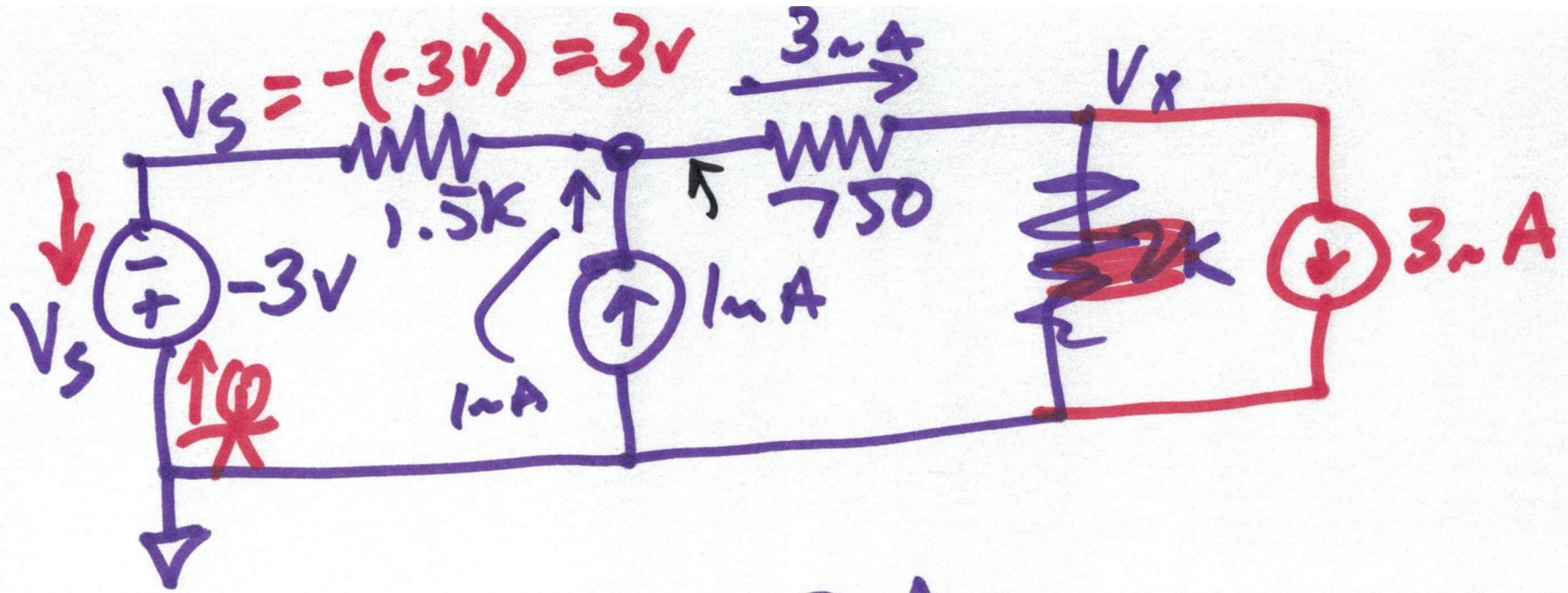


$$R_{eq} = \frac{2k \cdot 1k}{2k + 1k} = 666 \Omega$$

$$V_{x2} = \frac{2}{3}V$$

$$V_x = V_{x1} + V_{x2} = \frac{4}{3} + \frac{2}{3} = \frac{6}{3}V$$

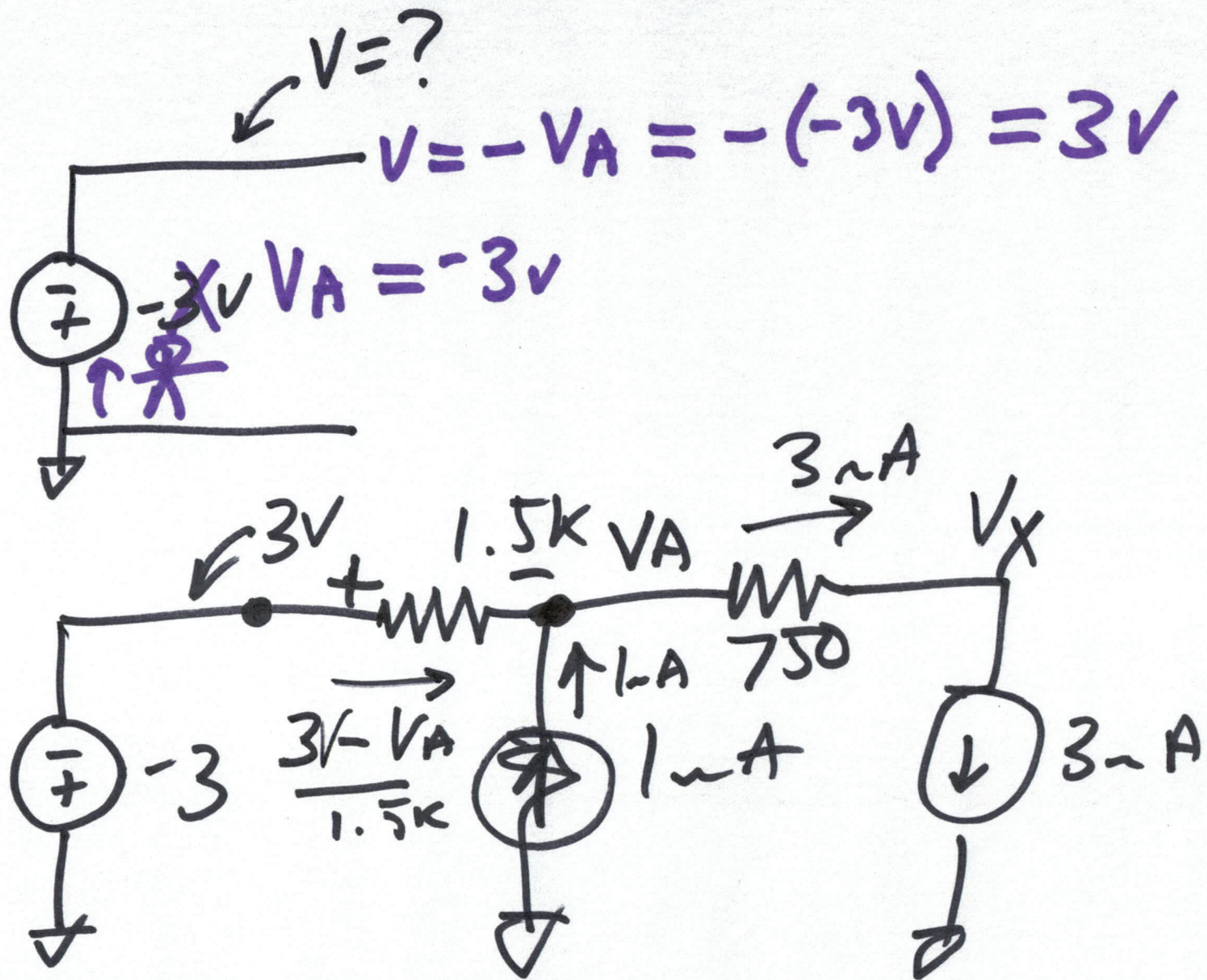
$$V_x = 2V$$

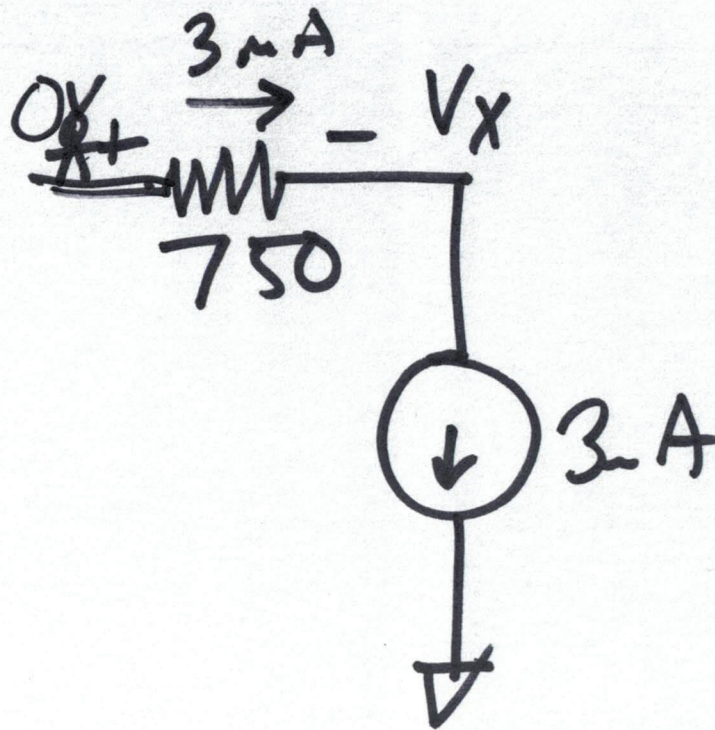


$$1.5K \left( \frac{V_A - 3}{1.5K} + 3mA \right) = (1mA) 1.5K$$

$$V_A - 3V + 4.5V = 1.5V$$

$$V_A = 0$$





$-750 \cdot 3 \mu A = V_x = -2.25 V$   
 $V_x = 2 - 750 \cdot 3 \mu A$   
 $= -0.25 V$   
 $= -\frac{1}{4} V$

$2V$   
 $750$   
 $3 \mu A$   
 $3 A$   
 $V_x$

7)