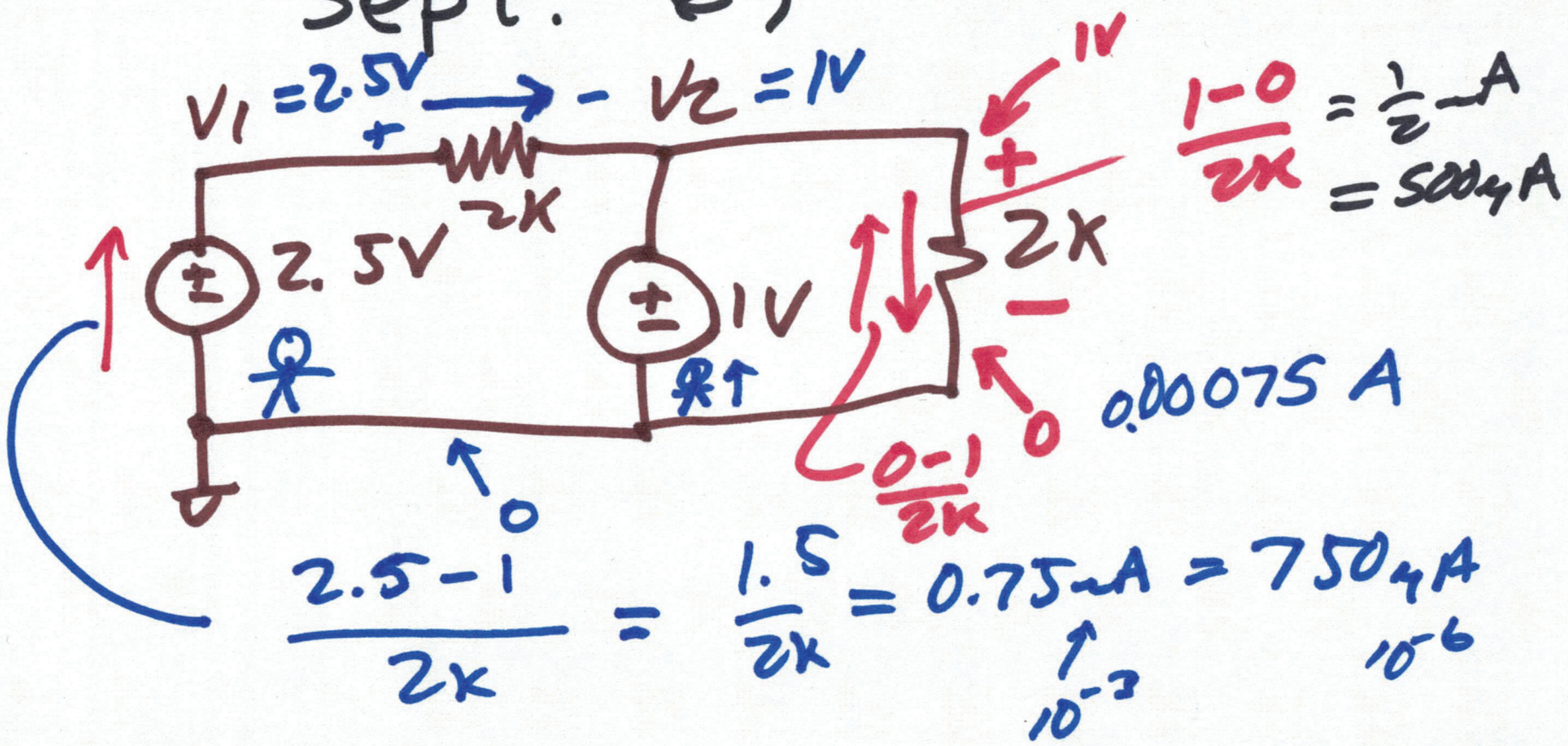
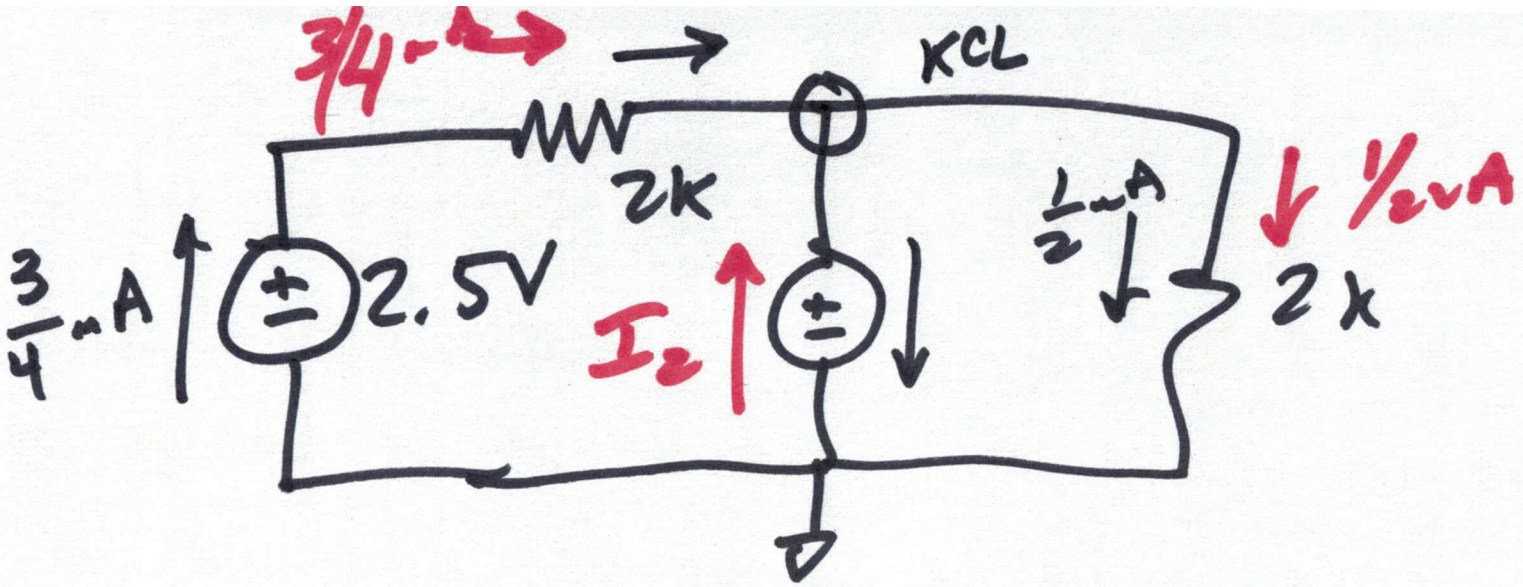
# EE 220 Circuits I

## Lecture 3

## Sept. 6, 2023



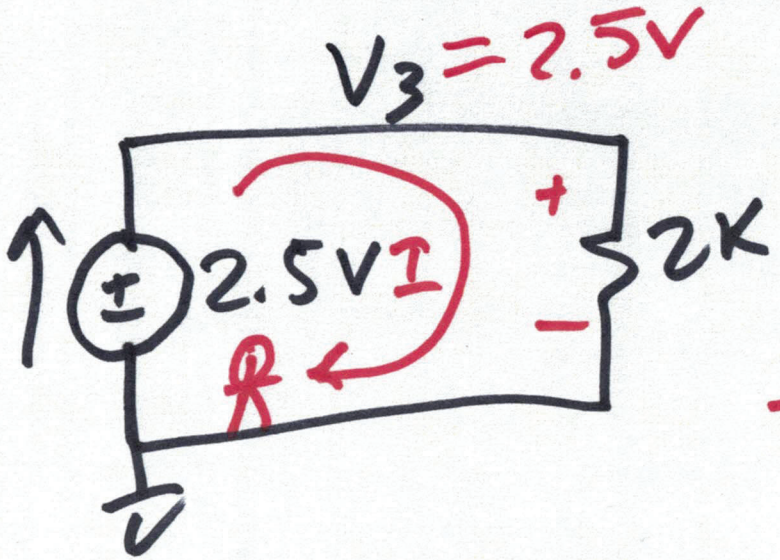



$$\frac{3}{4}\,mA = I + \frac{1}{2}\,mA$$

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

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

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

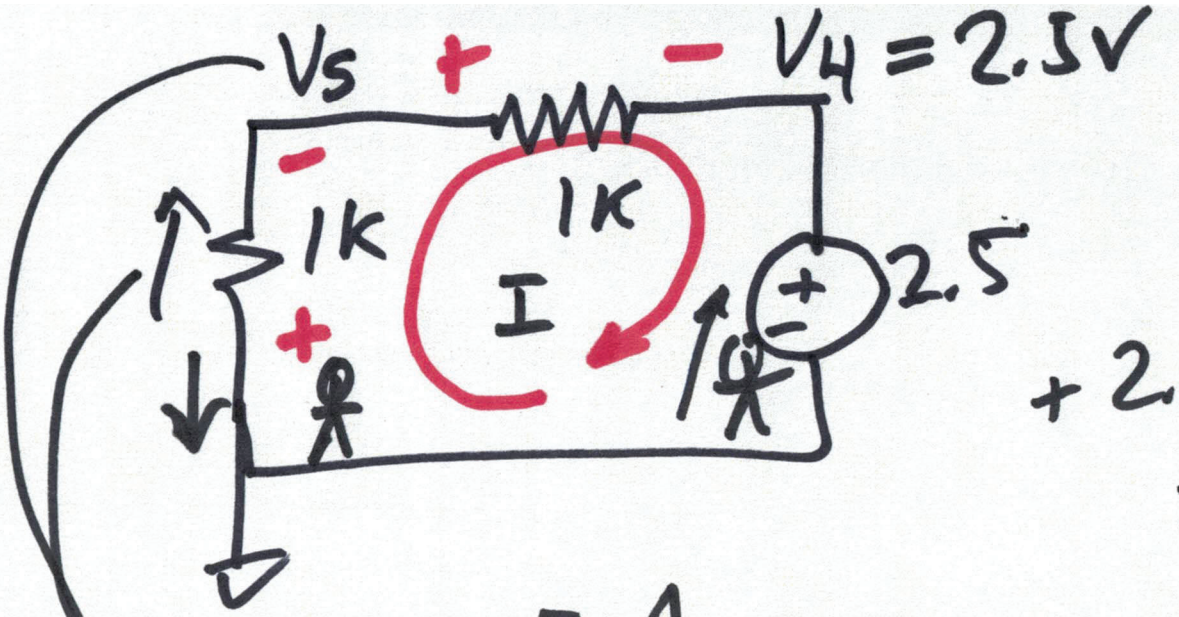



$$+2kI - 2.5 = 0$$

$$2kI = 2.5$$

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

$$\boxed{I = 1.25\,mA}$$




$V = IR$

$+2.5 + I1K + I1K = 0$

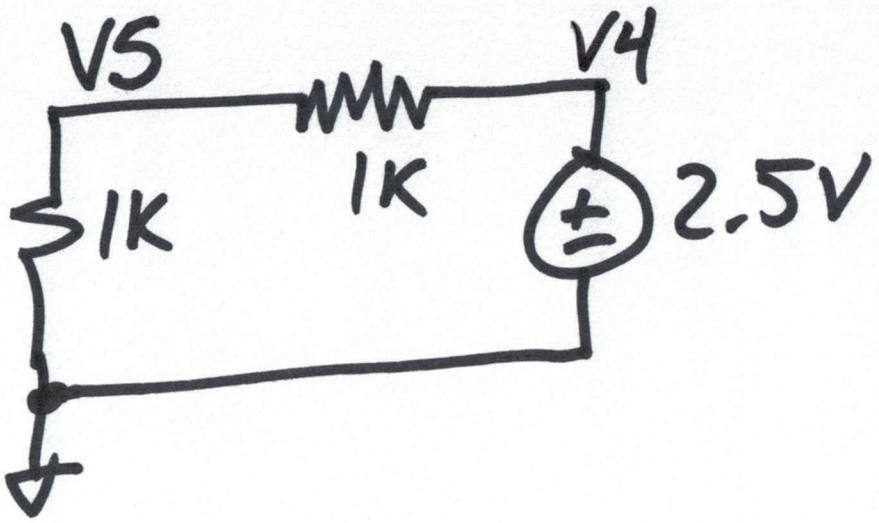
$2kI = -2.5$

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

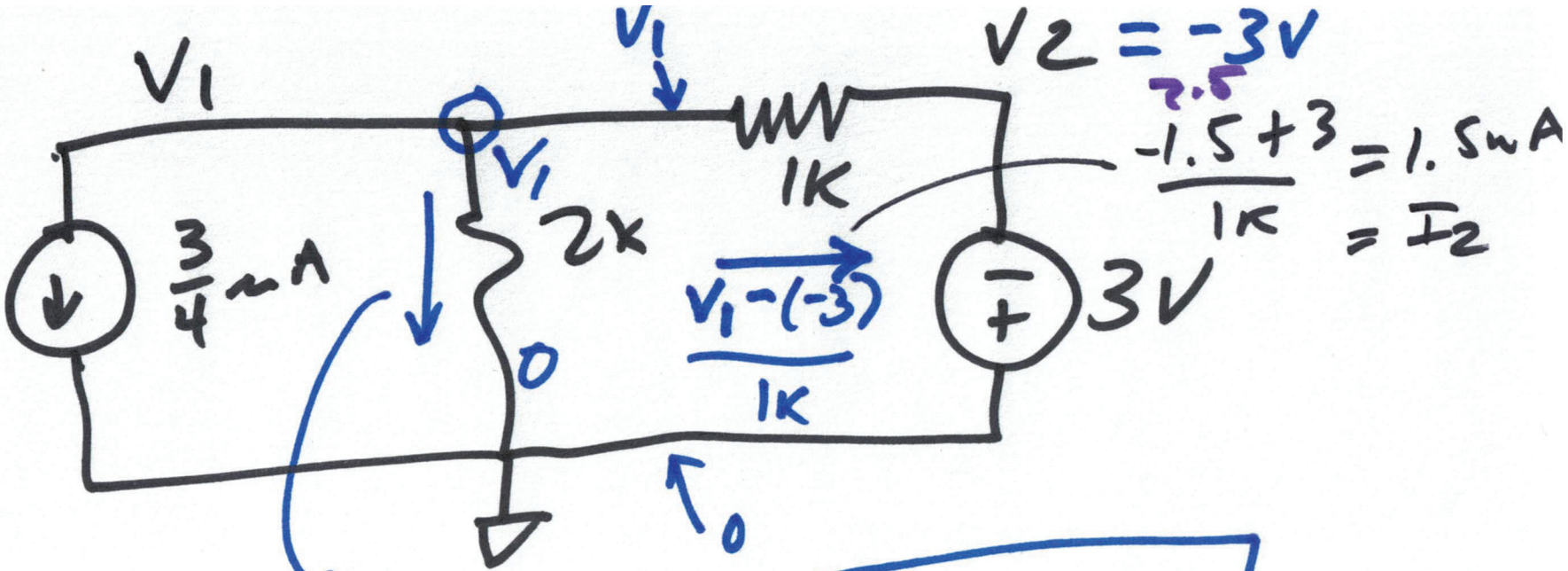
$= -1.25 mA$ ($10^{-3}$)

$V_5 = -1K(-1.25mA)$

$V_5 = 1.25V$




5)




$V_1 = -1.5V$

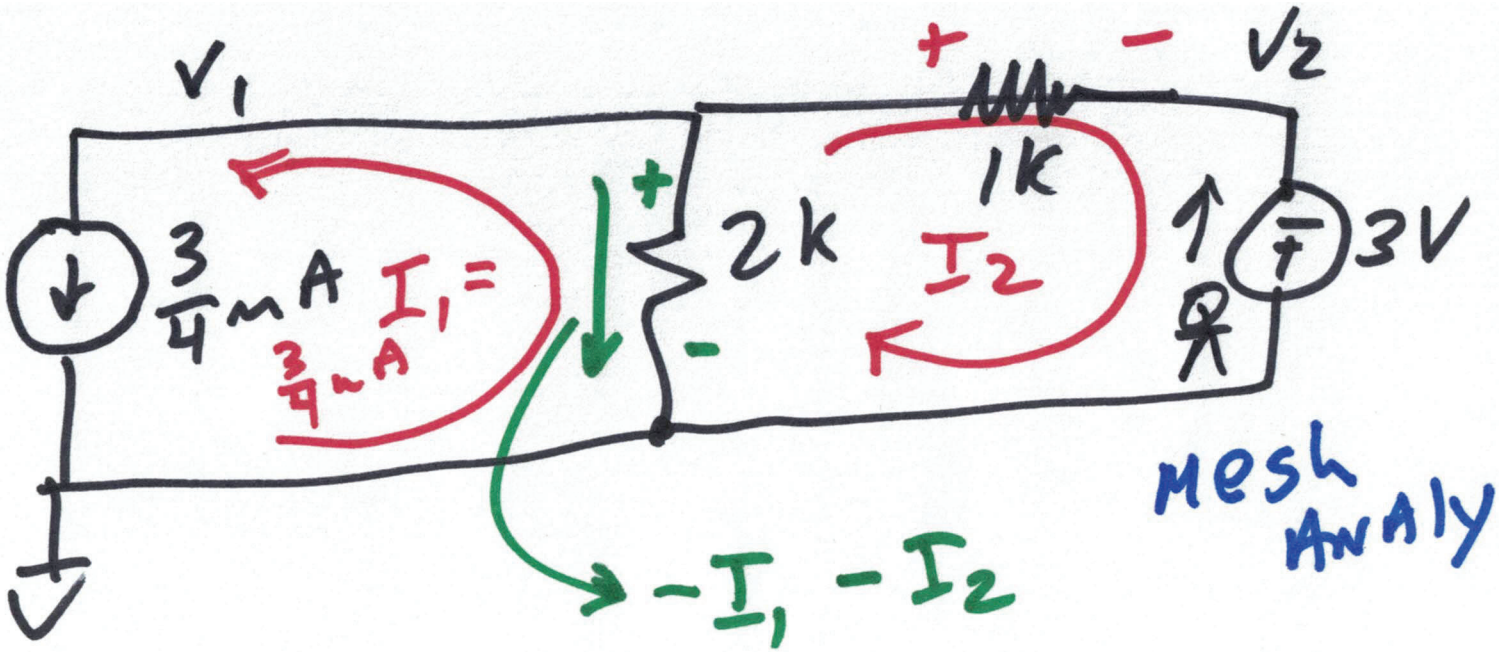
$$2K\left(\frac{3}{4}mA + \frac{V_1}{2k} + \frac{V_1+3}{1K}\right) = (0)2k$$

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

$$3V_1 = -4.5$$

$$V_1 = -1.5V$$

b)




Mesh Analysis

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

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

$$-3 + 1K I_2 + \underbrace{2K I_1}_{2k \cdot \frac{3}{4}mA} + 2K I_2 = 0$$

$$= 1.5V$$

$$-1.5 + 3K I_2 = 0$$

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