

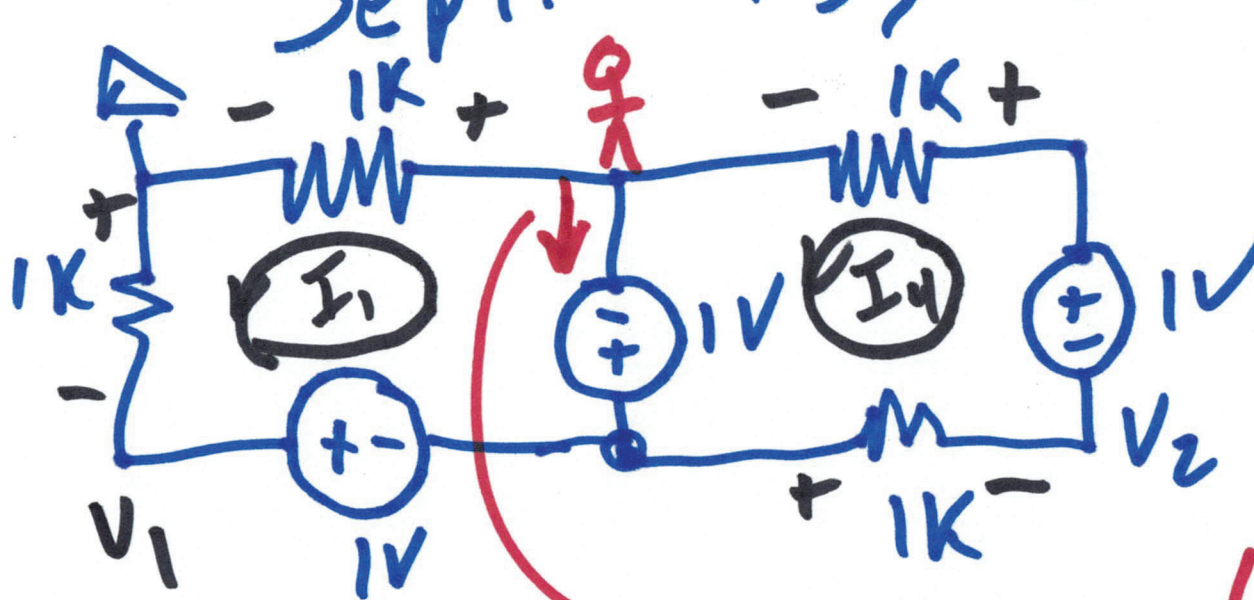
EE 220

Circuits 1

Lecture 6

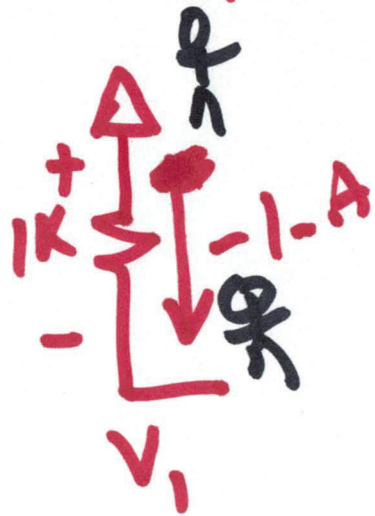
Sept. 13, 2021

$$V = IR$$



$V_2 = ?$
 $V_1 = ?$

$$-I_1 + I_4 = -(-1\mu A) + 1\mu A = 2\mu A$$



$$+1V + 1V + 1kI_1 + 1kI_1 = 0$$

$$2kI_1 = -2V$$

$$I_1 = -1mA$$

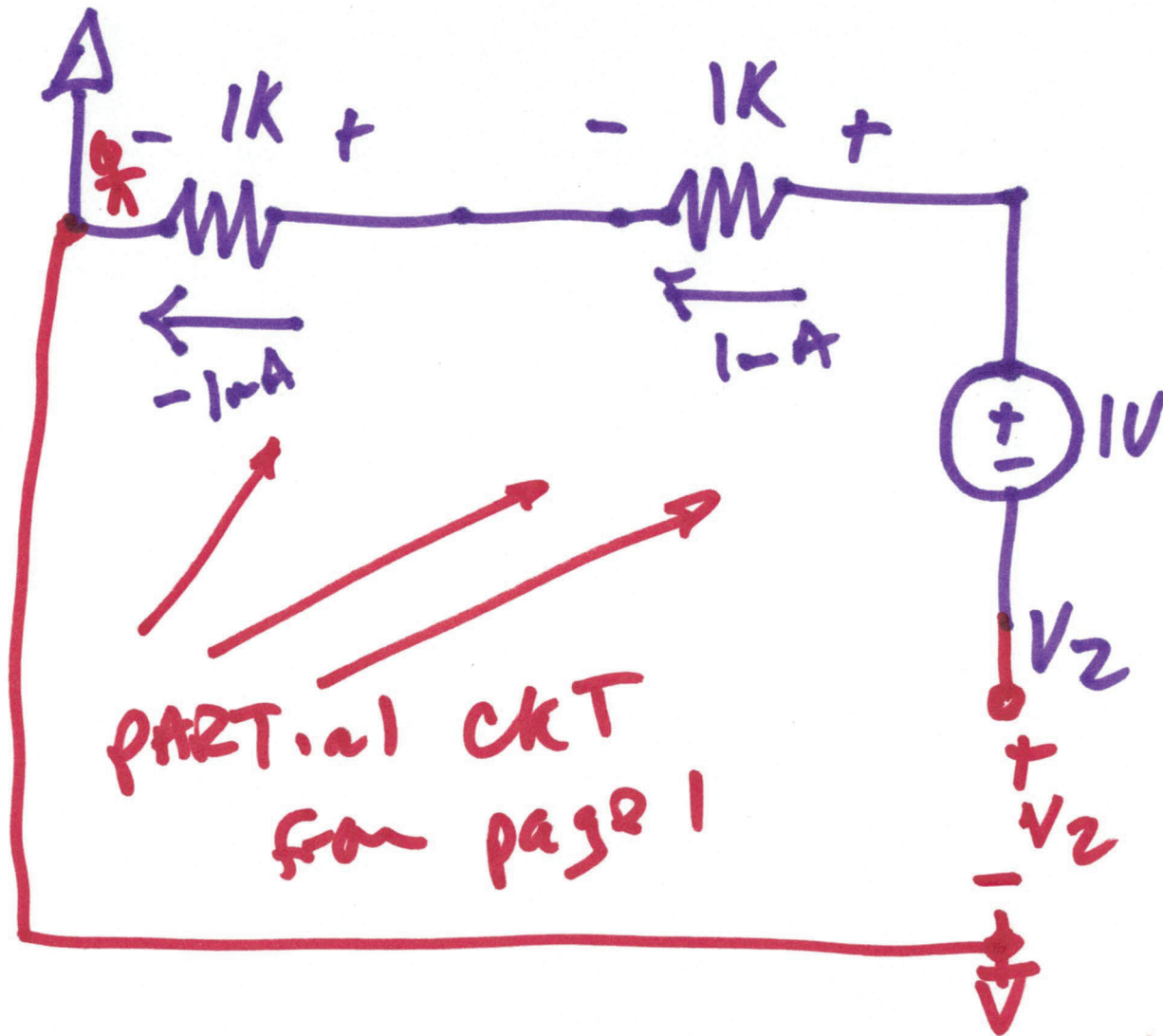
$$-1k(-1mA) = V_1 = 1V$$

$$+1V - 1kI_4 + 1V - 1kI_4 = 0$$

$$2V = 2kI_4$$

$$I_4 = 1mA$$

2)



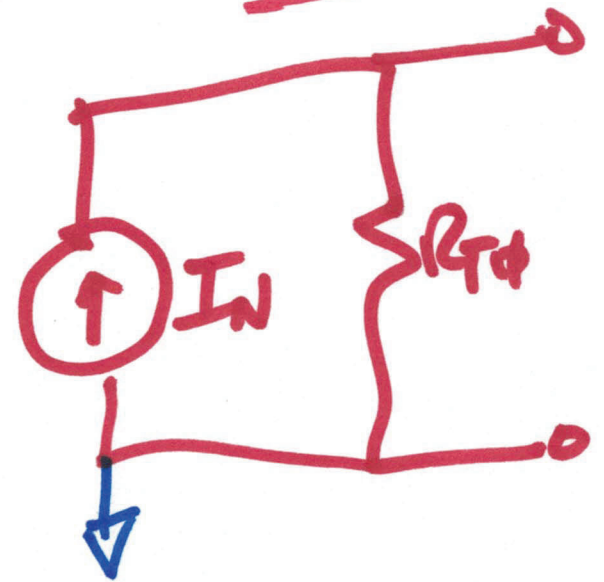
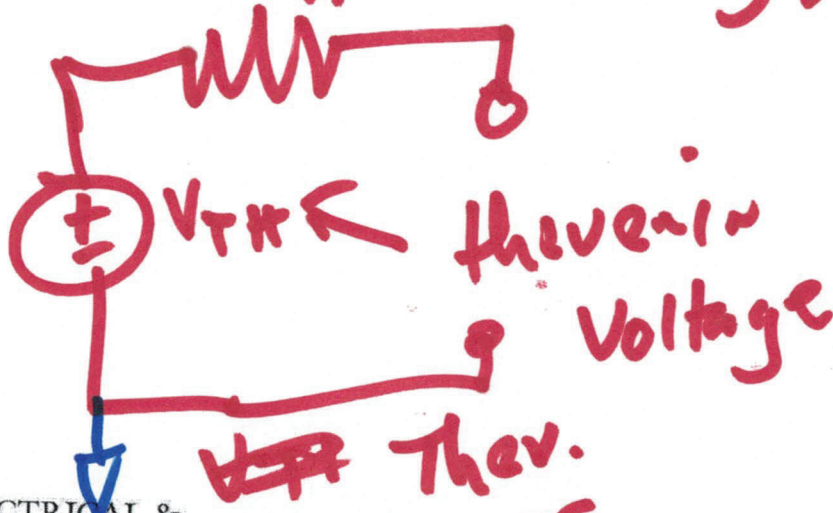
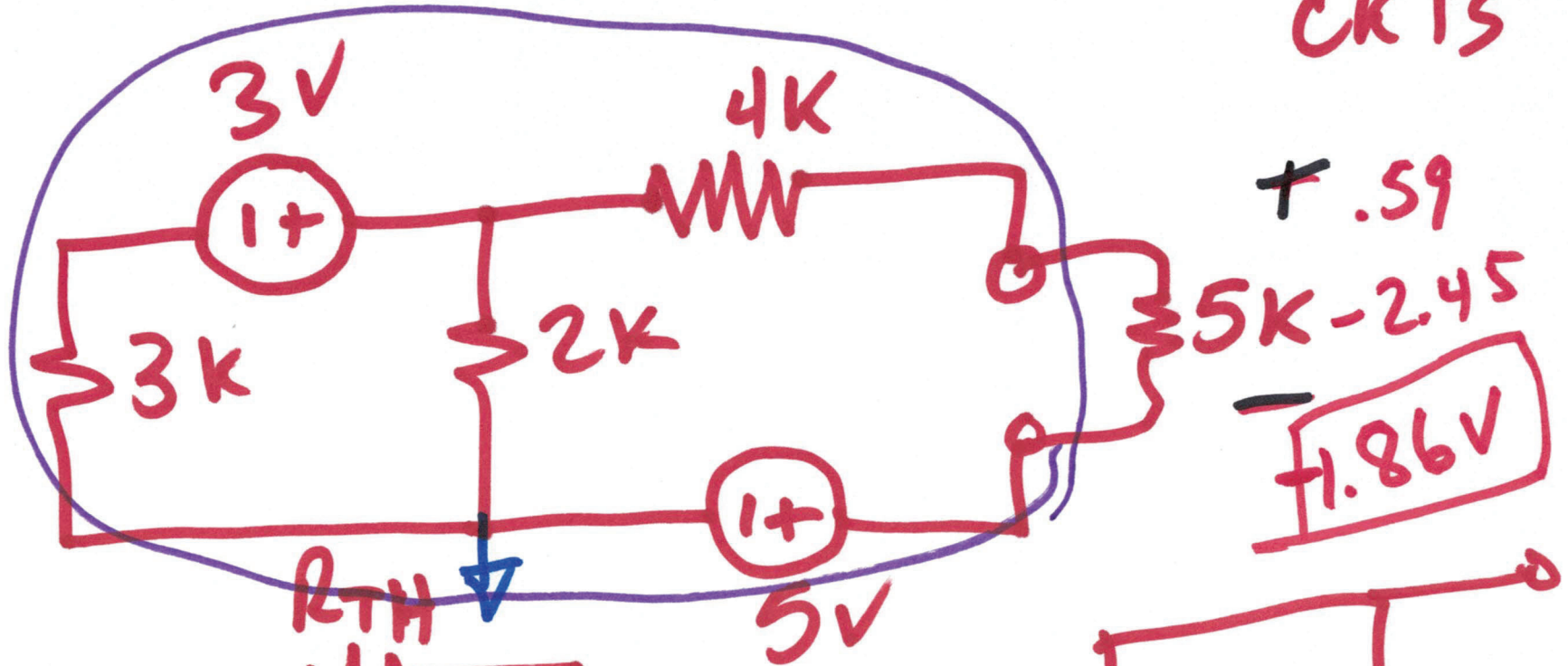
PARTIAL CKT
from page 1

$$+1k \cdot (-1mA) + 1k(1mA) - 1V - V_2 = 0$$

$$V_2 = -1V$$

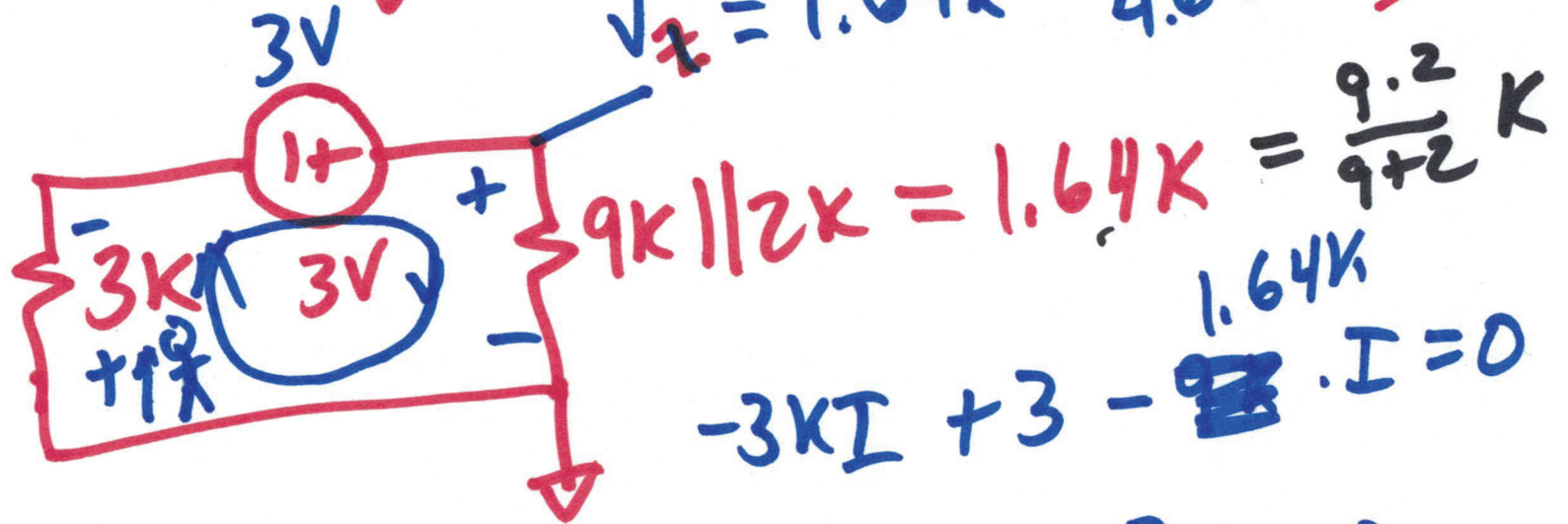
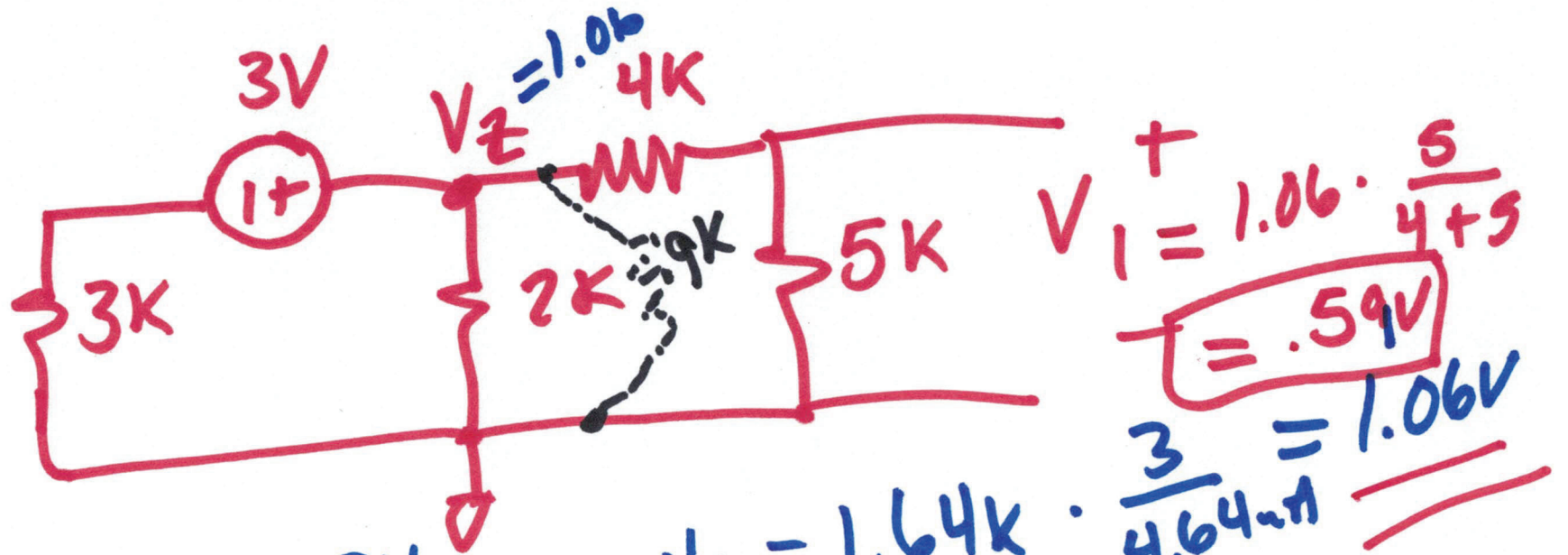


THEVENIN & NORTON EQV. CKTS



A)

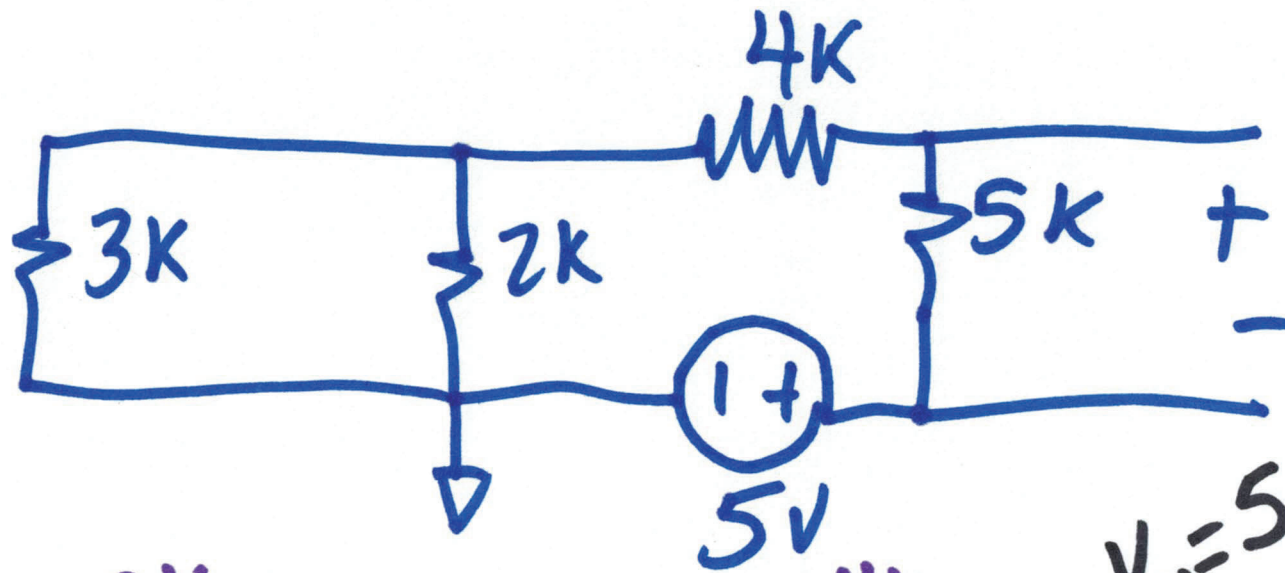
eq.



$$-3kI + 3 - 1.64k \cdot I = 0$$

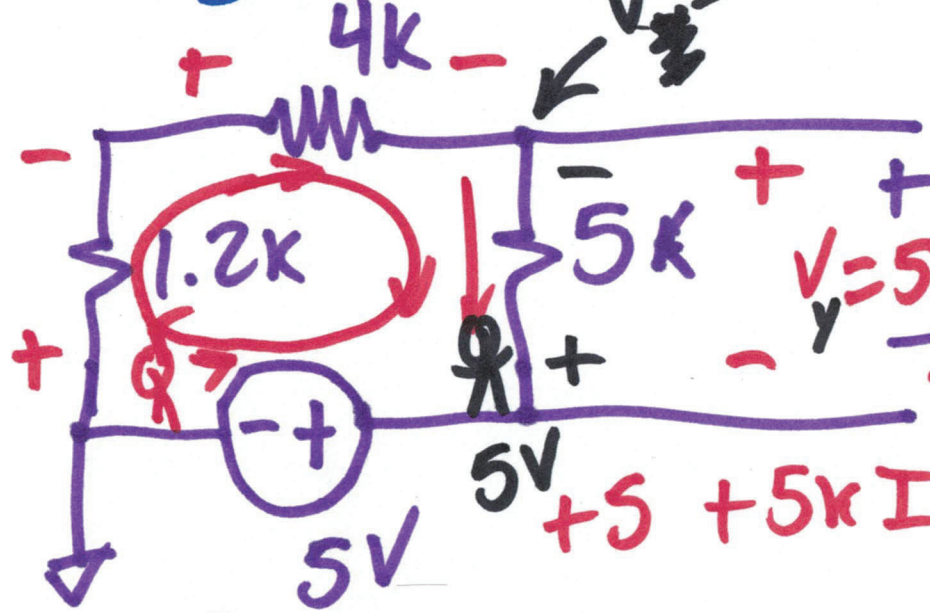
$$I = \frac{3}{4.64} mA = 0.647 mA$$

5)



$$V_x = 5 + V_4 = 2.55V$$

$$\frac{3k \cdot 2k}{3k + 2k} = 1.2k$$



$$V = 5k \cdot \left(\frac{-5}{10.2k}\right) = -2.45$$

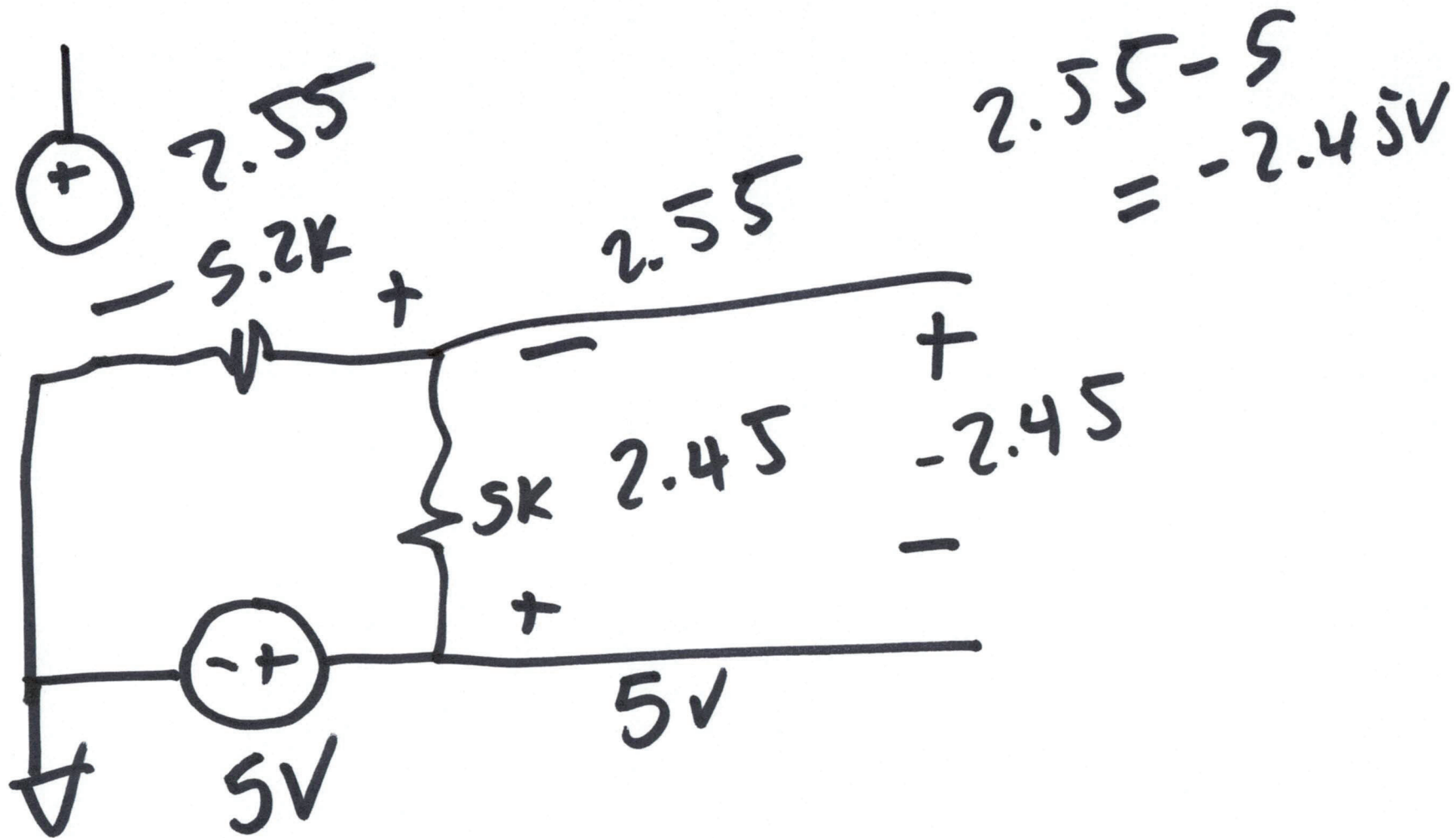
$$\frac{1}{R_T} = \frac{1}{R_1} + \frac{1}{R_2}$$

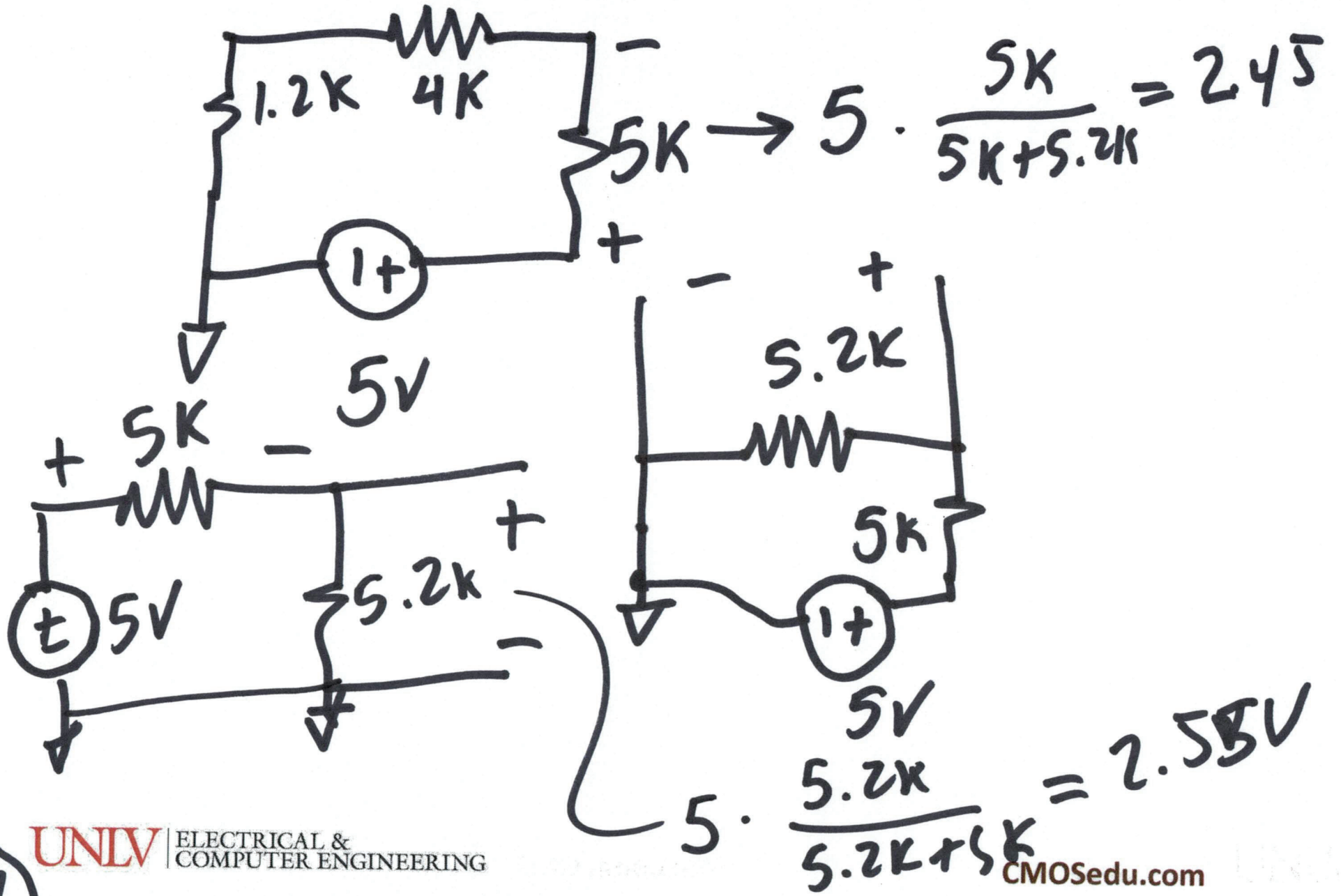
$$R_T = \frac{R_1 \cdot R_2}{R_1 + R_2}$$

$$+5 + 5kI + 4k \cdot I + 1.2kI = 0$$

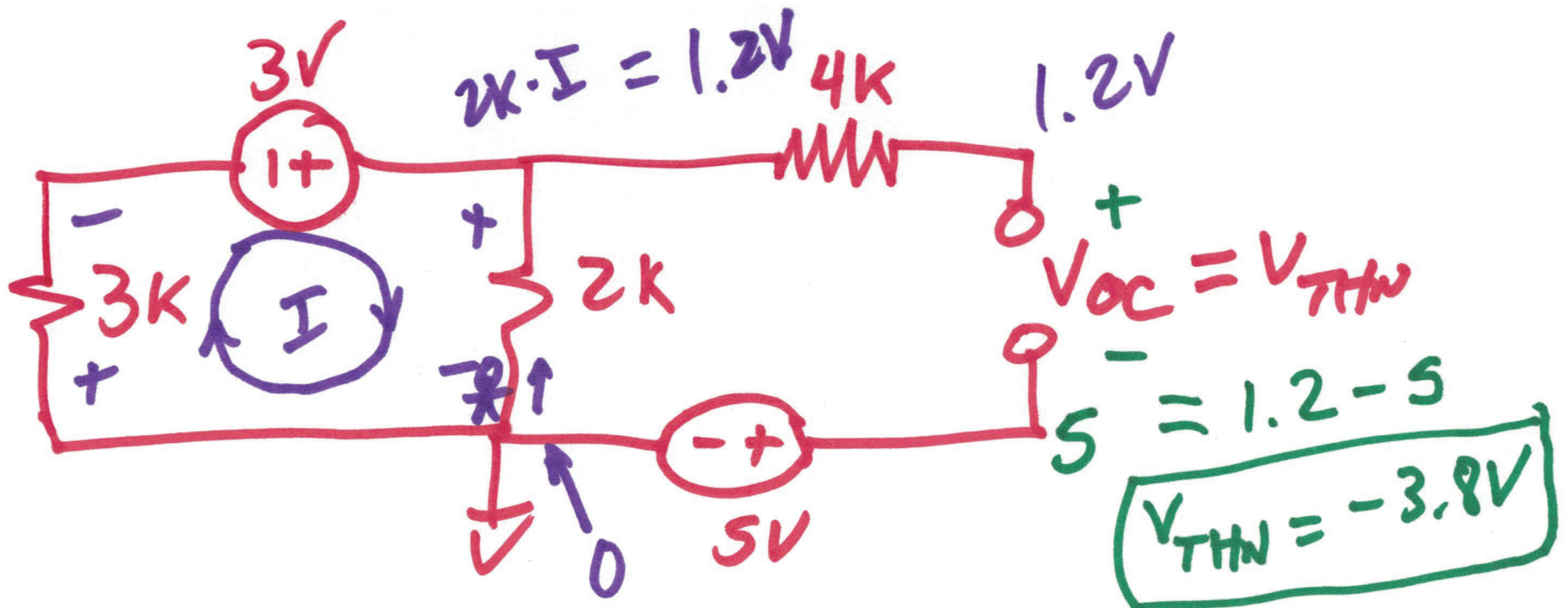
$$I = \frac{-5}{10.2k}$$

6)





8)



$$+2kI - 3V + 3k \cdot I = 0$$

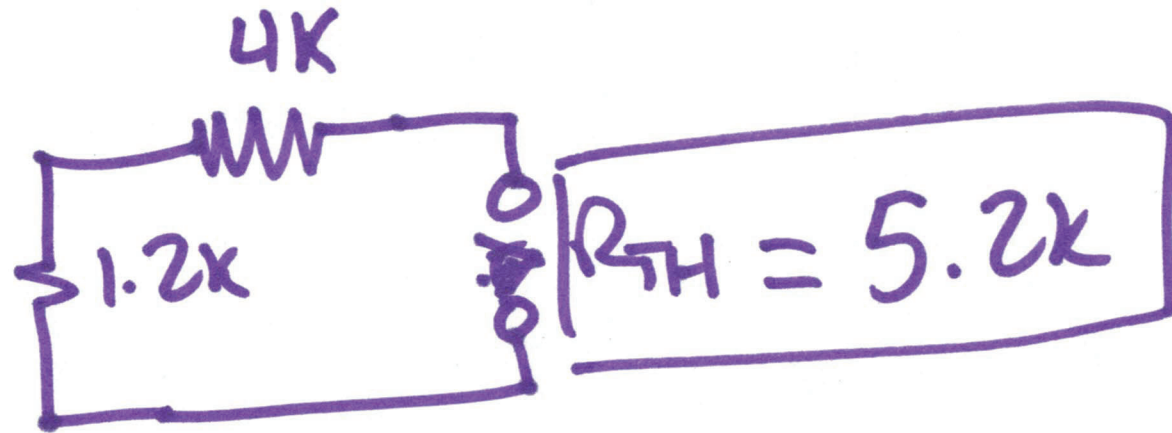
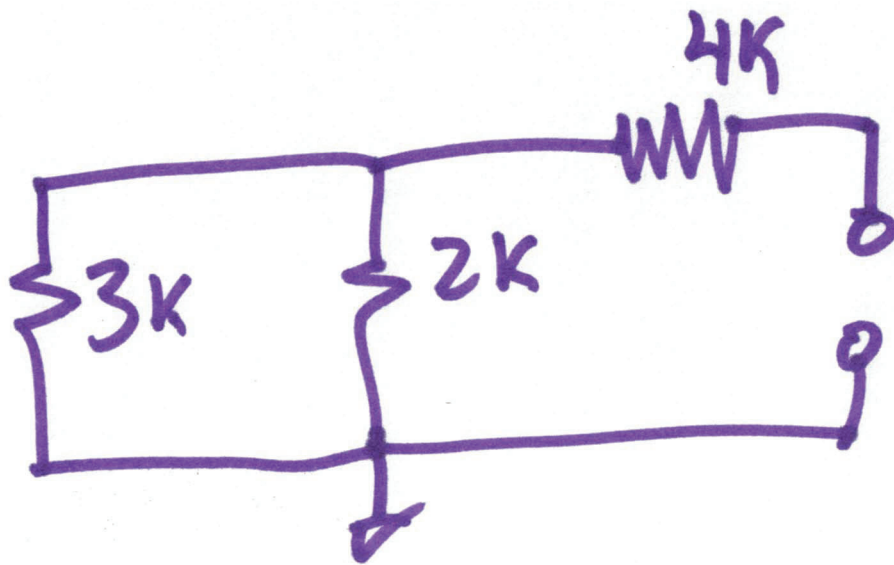
$$I \cdot 5k = 3$$

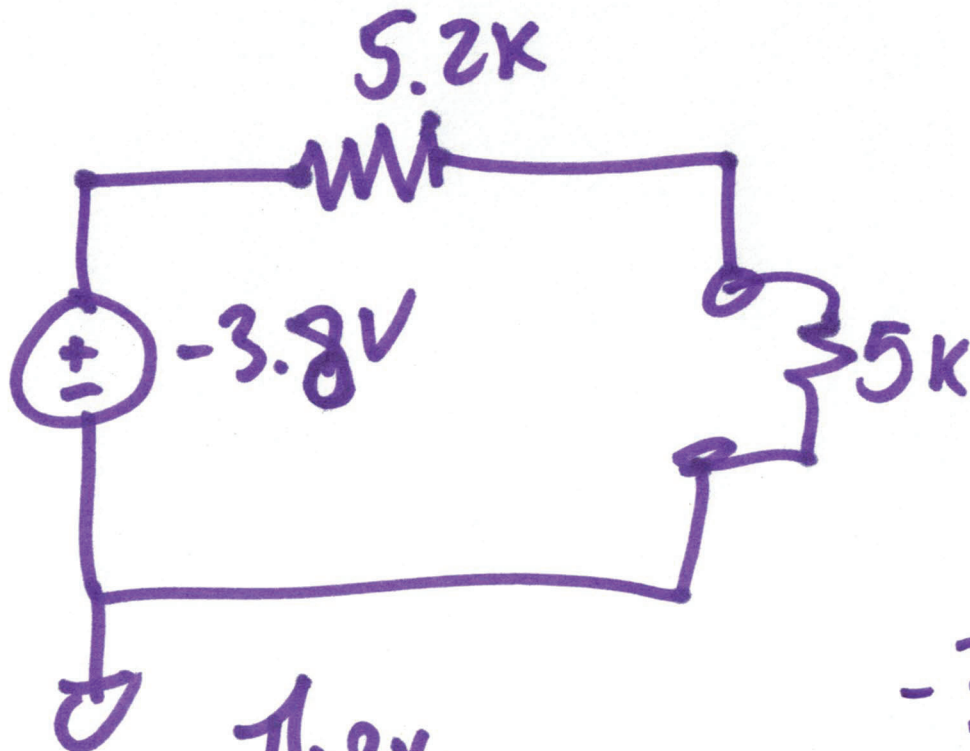
$$I = \frac{3}{5} \text{ mA} = 0.6 \text{ mA}$$

$$= 600 \mu\text{A}$$

$$= 0.0006 \text{ A}$$

9)



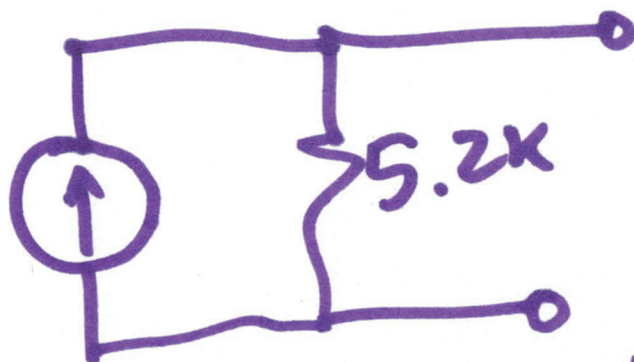


Ther.
Equiv.

$$-3.8 \cdot \frac{5}{5 + 5.2}$$

$$\boxed{-1.86V}$$

$$I_{sc} = \frac{-3.8V}{5.2k}$$



NORTON
Equiv.

11)

