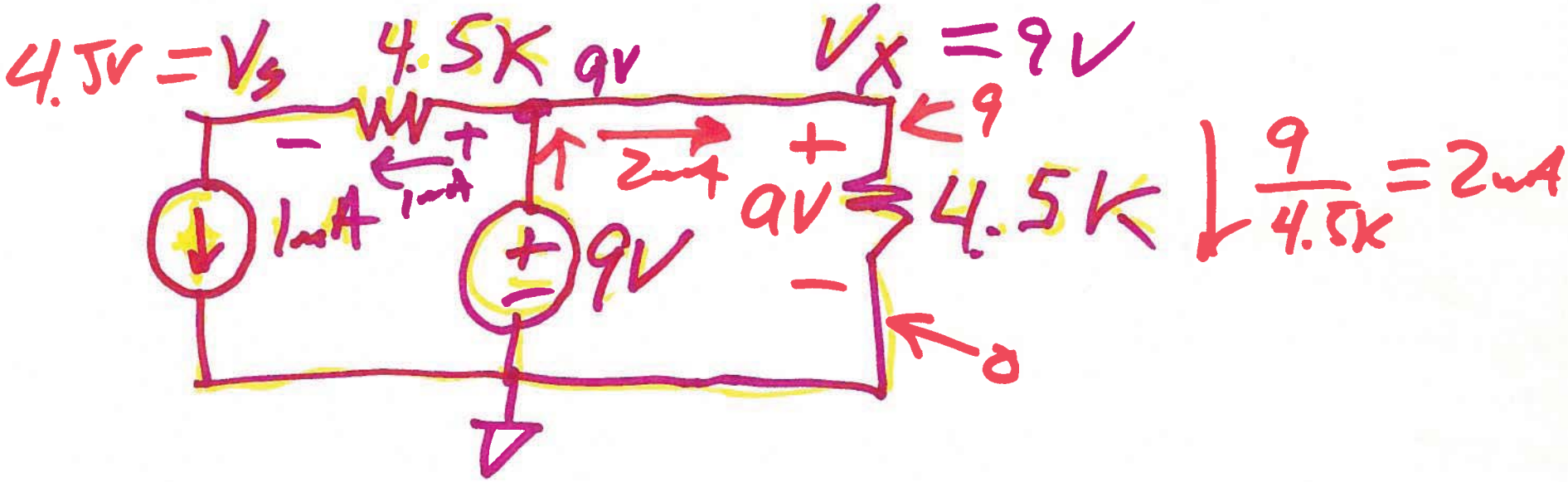
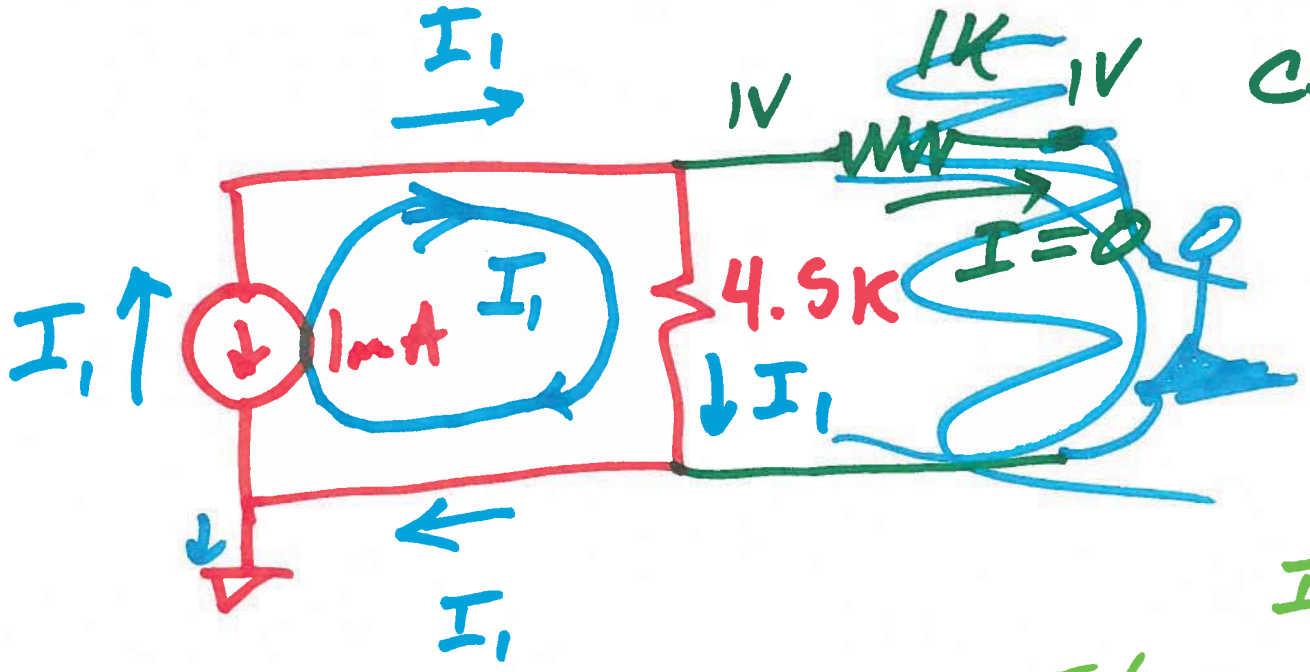
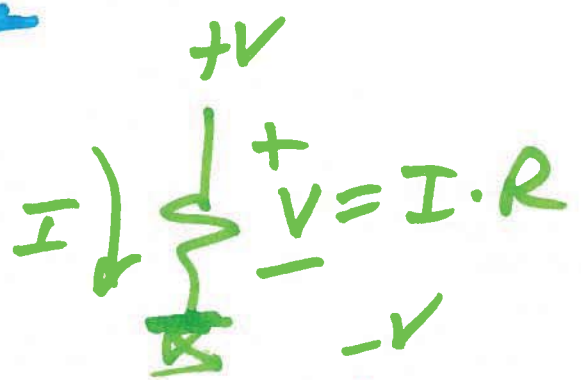
EE 220
Circuits I

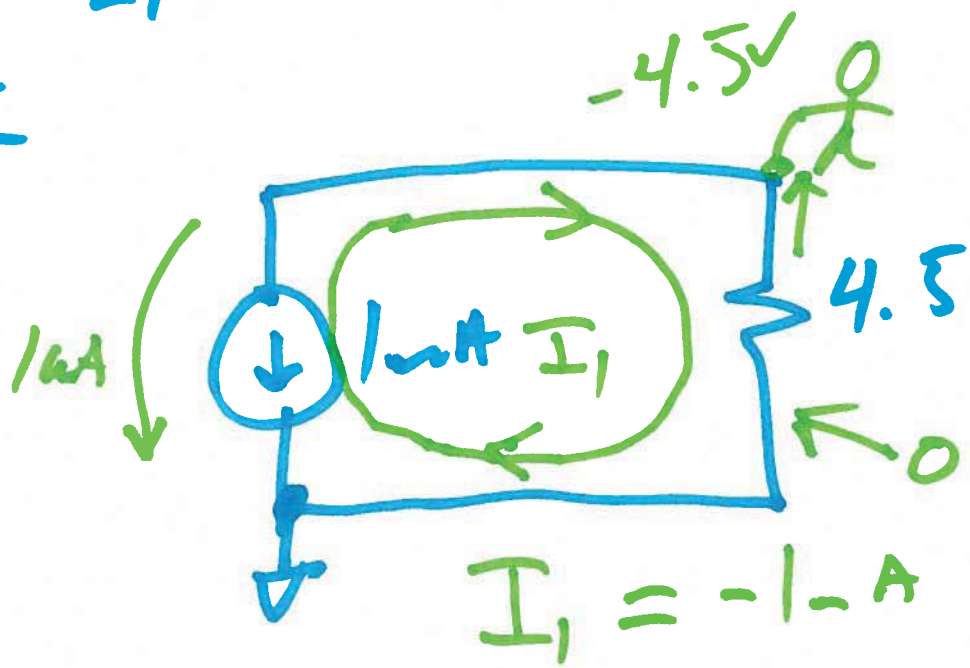
Lecture 7

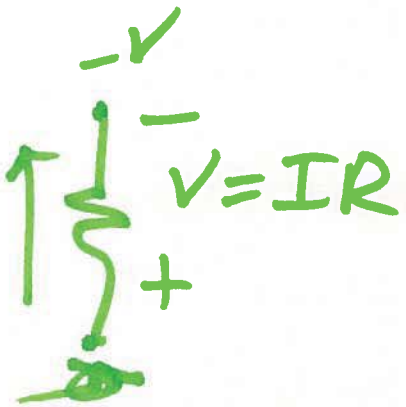


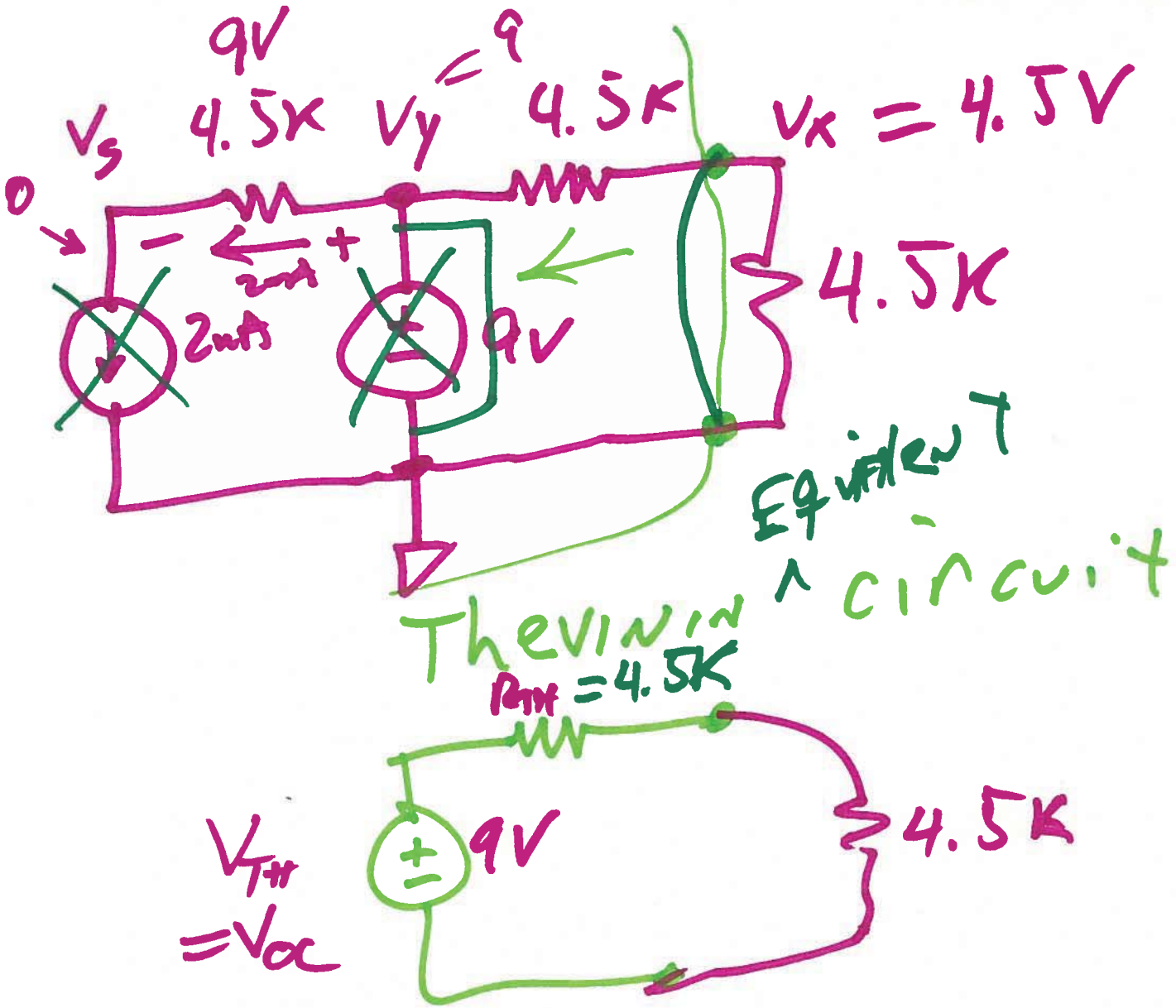

I1
1V
1K
1V
CA. 1980
I1
1mA
I1
4.5K
I=0
I1
I1

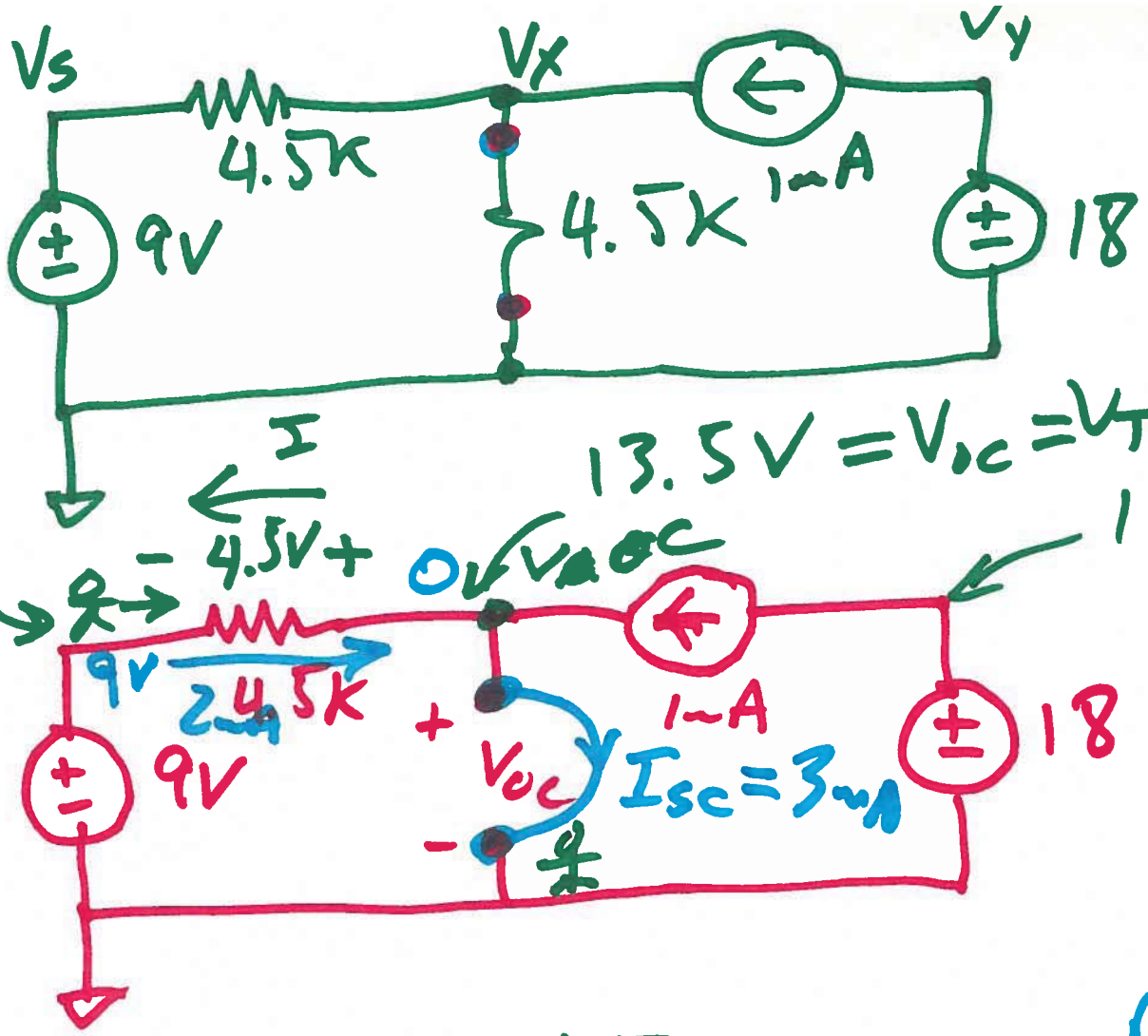

+V
I
+
V=I·R
—

GFCI


-4.5V
1mA
1mA
I1
4.5K
0
I1 = -1 A

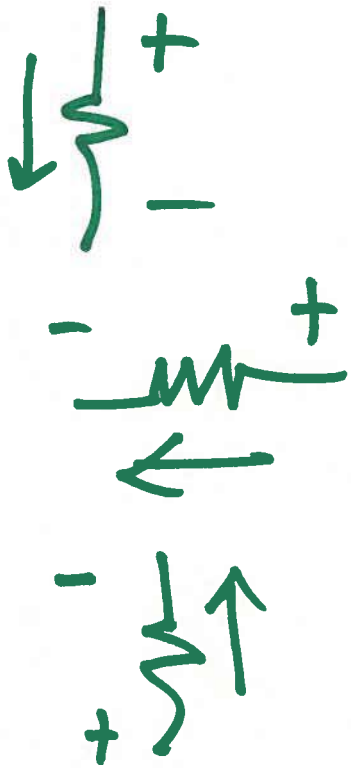

-V
—
V=IR
+


9V
4.5K
$V_y = 9$
4.5K
$V_x = 4.5V$
V_s
0
2mA
2mA
9V
4.5K
Equivalent
circuit
Thevinin
$R_{TH} = 4.5K$
9V
4.5K
V_{TH}
$= V_{OC}$



$V_{THN} = 13.5V$

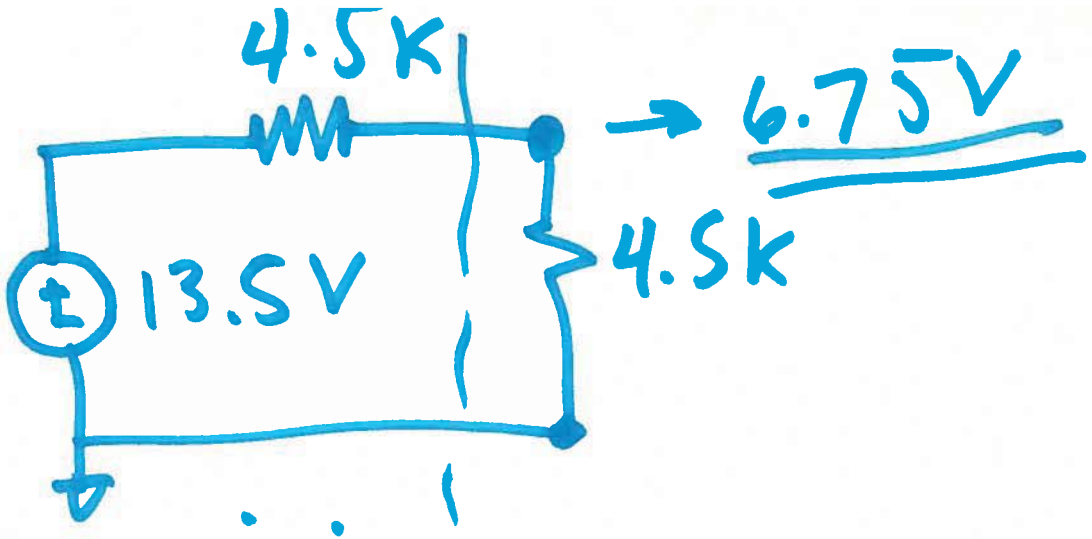
$R_{TH} = 4.5K$



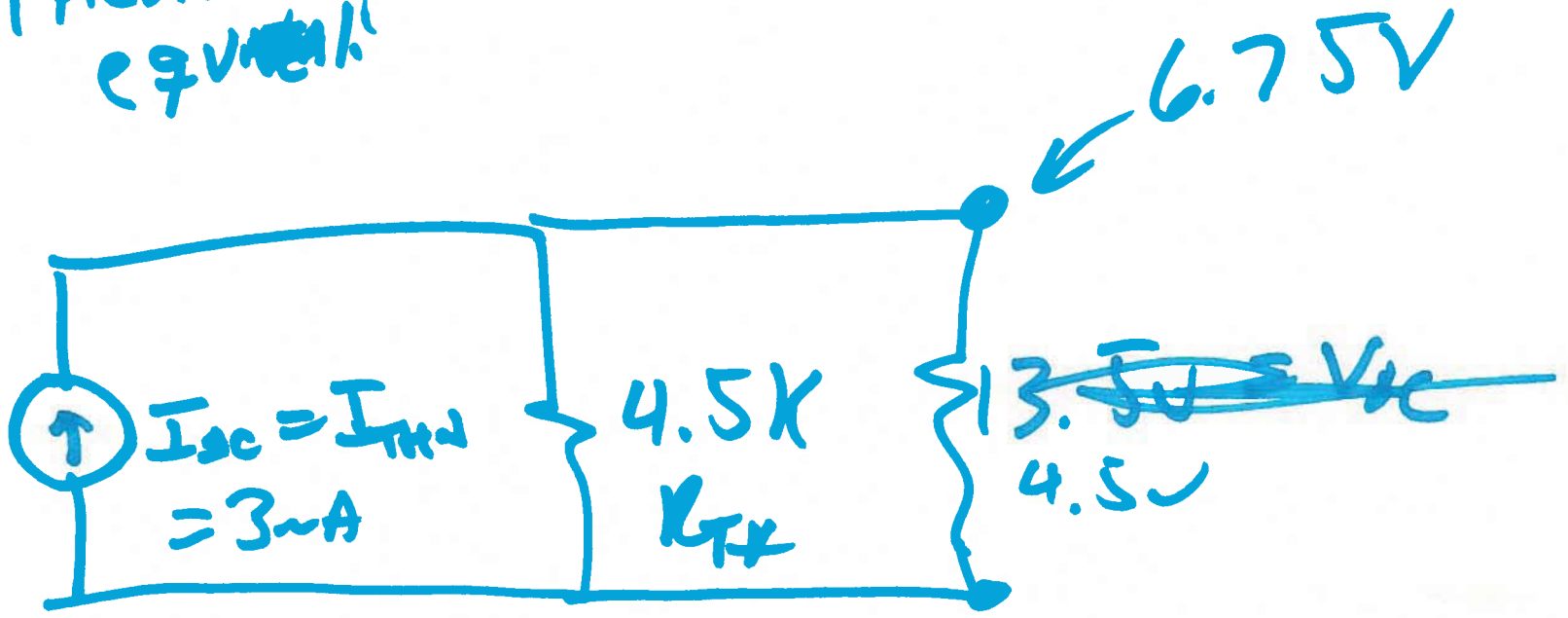
$$V_{oc} = I \cdot 4.5K + 9V$$

$$V_{oc} - I \cdot 4.5K - 9V = 0$$

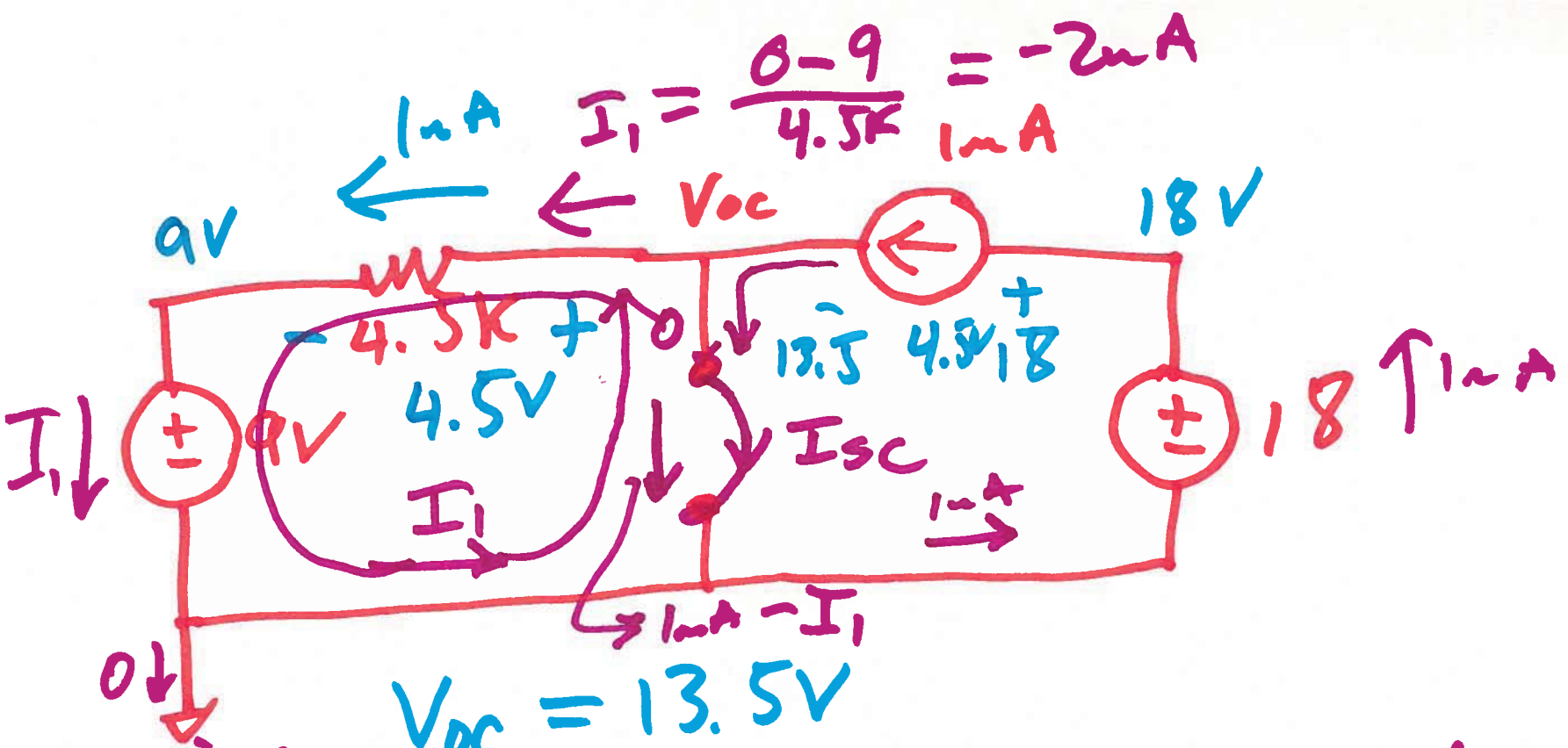
$$R_{TH} = \frac{V_{oc}}{I_{sc}} = \frac{13.5}{3mA} = 4.5K$$



THEVENIN EQUIV.

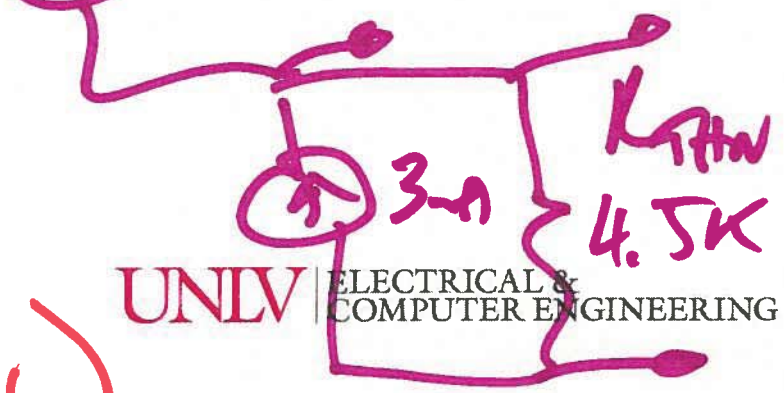


NORTON EQUIV.



$V_{OC} = 13.5V$

$I_{SC} = 1mA - I_1 = 1mA - (-2mA)$

$= 3mA$

$R_{THV} = \frac{V_{OC}}{I_{SC}} = \frac{13.5V}{3mA} = 4.5K$