ECE 3 Lab 1 prelab

Lawrence Liu

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Problem 1

(a)

$47k\Omega$ with variance of 5%

(b)

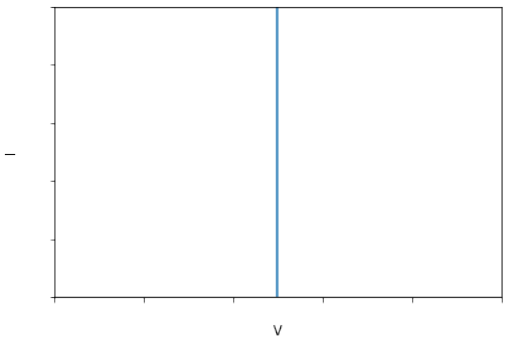
$100k\Omega$ with variance of 10%

Problem 2

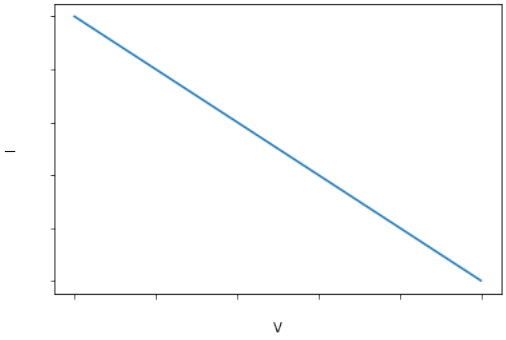
0Ω because the resistor is parallel with a short circuit, to properly measure the resistance you should plug in the resistor with B one row back.

Problem 3

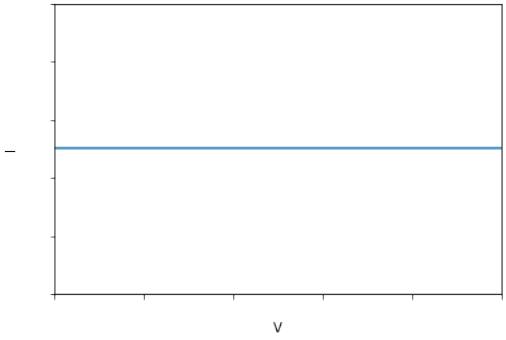
Ideal Voltage Source



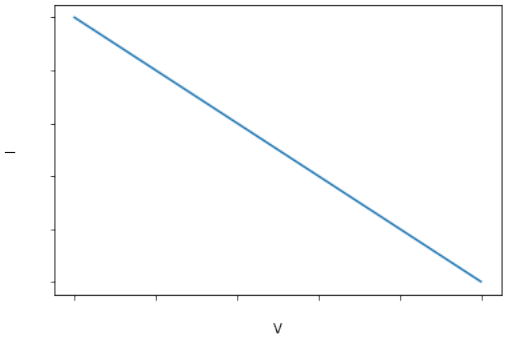
Non Ideal Voltage Source



Ideal Current Source



Non Ideal Current Source



Problem 4

Voltage Divider

From KVL we have

$$V_0 = I(R_1 + R_2)$$

$$I = \frac{V_0}{R_1 + R_2}$$

therefore we have that the voltage drop across R_1 is

$$\frac{V_0 R_1}{R_1 + R_2}$$

Voltage Divider

We have

$$V_0 = I_T \frac{R_1 R_2}{R_1 + R_2}$$

therefore we have that the current across R_1 is

$$V_0 = I_1 R_1$$

$$I_T \frac{R_1 R_2}{R_1 + R_2} = I_1 R_1$$

$$I_T \frac{R_2}{R_1 + R_2} = I_1$$