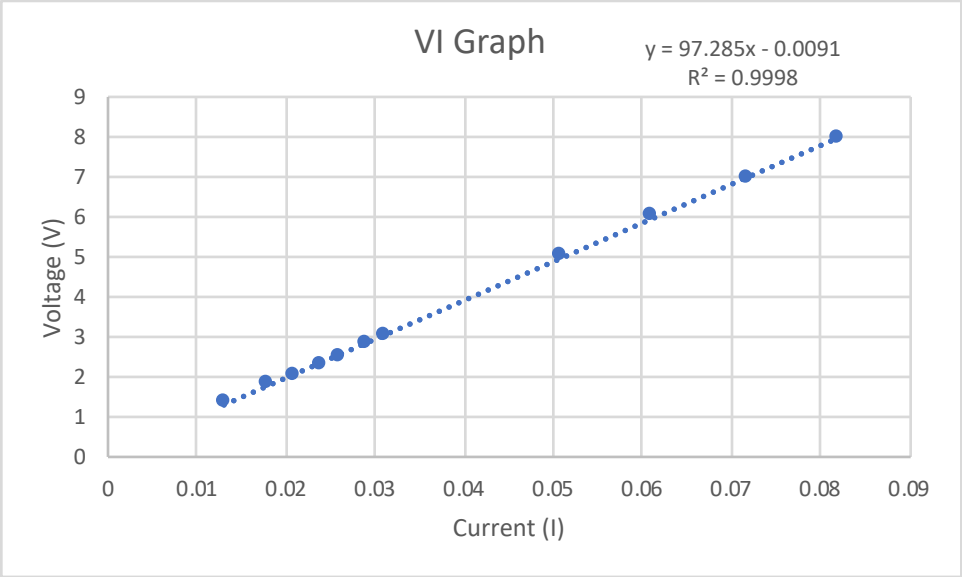
Victor Lam
Physics 152
Section LS
Lab Report 1

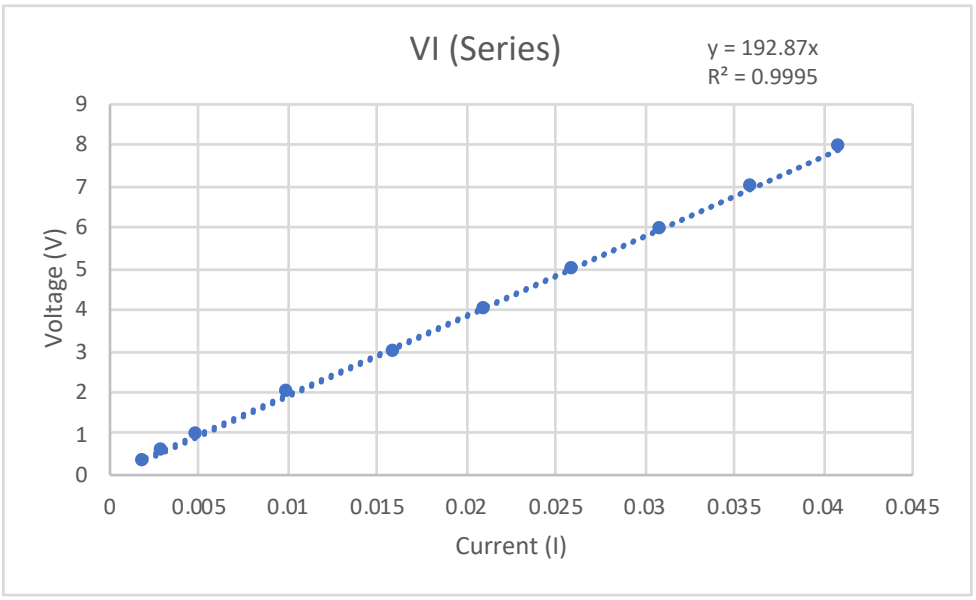
1. **In part 1.2.2 plot Voltage vs. Current for the resistor. Add a best fit line and determine the slope. (1 point)**



The slope is 97.1 as given by the LINEST function. The slope of the best fit line is 97.285 as given by the graph.

2. **What does the slope in question 1 represent? Is this close to your other two measured values? (1point)**
The slope in question 1 is Voltage/Current, which is resistance.

3. **In part 1.6 plot Voltage vs. Current for the resistors in series. Add a best fit line and determine the slope. (2 points)**



The slope is 192.87 as given by the LINEST function, and the slope of the best fit line is 192.87.

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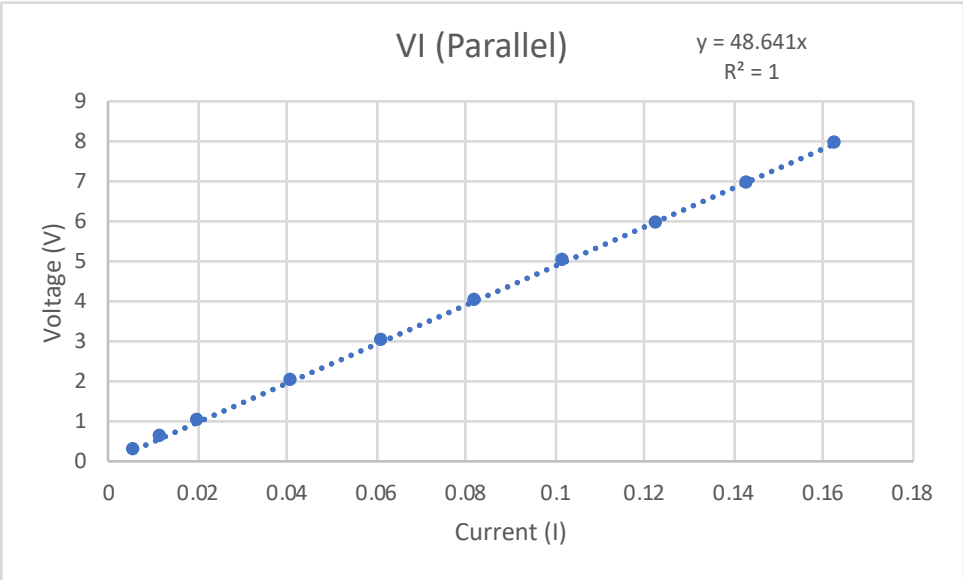
4. **Calculate the theoretical equivalent series resistance (show work). How does this value compare to your slope in question 3? (1 point)**
   $R_{eff} = R_1 + R_2$ ——-> 97.1 + 97.1 = 194.2

   The actual was lower than the theoretical by about 2.4.

5. **In part 1.6 plot Voltage vs. Current for the resistors in parallel. Add a best fit line and determine the slope. (1 points)**



The slope is 48.64 as given by the LINEST function and the slope of the best fit line is 48.641.

6. **Calculate the theoretical equivalent parallel resistance (show work). How does this value compare to your slope in question 5) (2 point)**
   $1/R_{eff} = 1/R_1 + 1/R_2$ ———-> 1/(97.1) + 1/(97.1) = 2/(97.1) = 1/(48.55)

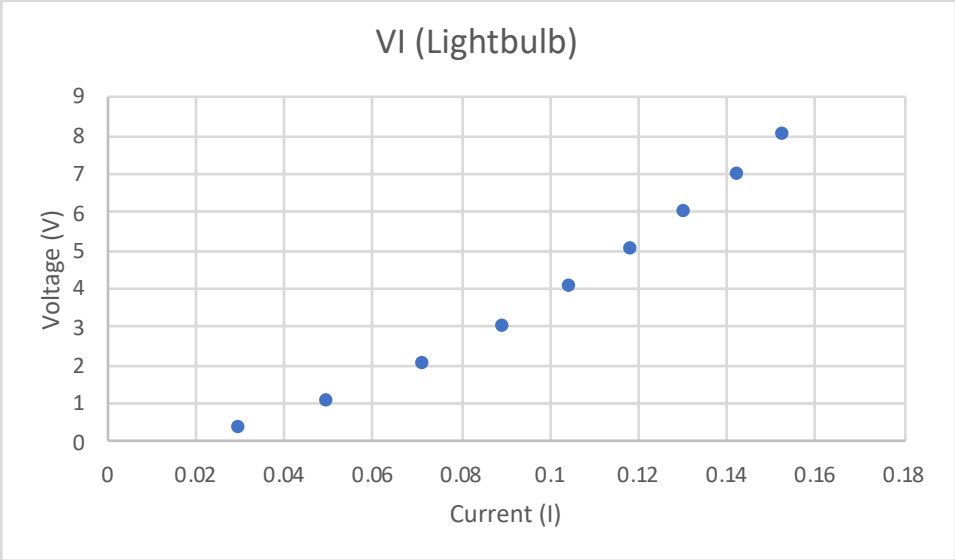
   The actual is higher than the theoretical by about .09.

7. **From part 1.7, testing of Kirchhoff's Current Rule, calculate the current through each of the two resistors in parallel. How does the sum of current compare to total output current of power supply? (1 point)**
   The sum of currents is .1636, which is greater than the total output current of power supply.

8. **From 1.7, testing of Kirchhoff's Voltage Rule, calculate the sum of voltages across the two resistors in series. How does the sum compare to the total voltage from the**

power supply? (1 point)
The sum of voltages is 5.6854, which is less than the total voltage from the power supply.

9. **In part 1.8 plot Voltage vs. Current for the light bulb. Do NOT add a best fit line. Instead, connect the data points to observe the behavior. Comment on the shape of the V vs. I graph for the light bulb. Is the light bulb an ohmic device; in other words, does it obey Ohm's Law? Why or why not? (2 point)**



This function looks exponential as the slope near the end appears to be approaching 1/0. The light bulb is not an ohmic device as resistance is not constant. If it was an ohmic device, the line would be linear.