Part D

1. Using the appropriate online appendix, Setup the TI calculator with the LavPro and Magnetic Field Sensor. Once the software is loaded run the DATAMATE program. From the main menu select (1.Setup). Set the sensor for CHI Magnetic Field-LO MAGNET FLD(MT). Set the Mode to <Events with Entry>. Select (1:OK) to return to the main menu.

2. Place the meter stick parallel to the bar magnet. When taking a measurement, the white dot on the probe should be facing the south pole of the magnet.

3. Now you are ready to take measurements. Select Start from the main menu. The strength of the magnetic field will be recorded when you press [ENTER], then you will enter the distance (d) between the probe and S-pole. Start with d=1cm and take measurements in 1 cm increments until d = 20cm. After your last measurement, press [STO->] to quit.

4. Quit the DATAMATE program from the main menu. Your measurements are stored as lists on the calculator. the list of distances will be stored in L1 and the reading the L2. Using STAT PLOT, plot Magnetic Field Strength vs. Distance (you will need to adjust the window settings).

5. Try to fit a curve to you plot. Is the curve linear, quadratic, exponential, a power curve? Using [Y=] try graphs of different forms and adjust the constants to fit a curve to this graph (ex. $y = mx+b$ or $y=ax^b$). Knowing that $B \sim 1/d^2$ you should be able to generate a curve of the form $y = ax^b$, that fits the plot of your data. Using [Y=] find the equation that best fits your data.

6. Record L1 and L2 in your lab manual, draw the plot and the fitted curve and write down the equation for this curve.