Assignment #2 ASTR 3800

This assignment comes in two parts.

The first part consists of exercises from Taylor. These are to be worked out on paper with pencils and answers turned in as hardcopies. Some of the Taylor exercises can be done with either a calculator or with Python. If you use Python for part I, the answer must be printed out and turned in as hardcopy.

Part II is exercises in computing. The results are to be digital and emailed to the TA. A printed plot should be emailed as a jpg or other appropriate type. You can send your Excel file as is. You can send your Python code as a .py or text file.

Part I

Taylor Problems: 2.1, 2.17, 2.27, 2.31

Part II

This is a basic exercise in manipulation of data and simple statistics.

Download the accompanying file called rays.txt from the website. "rays.txt"

It contains a table of six columns. Read the table into Python. Make each column an array variable. Call them x,y,z,qx,qy,qz. Calculate the average of x and of y and then calculate x-x_av and y-y_av. Plot x-x_av vs y-y_av with the point symbol to show the scatter diagram of values. Put a label somewhere in the square of the plot that has your name on it. Print the plot.

Then truncate each array to its first 25 elements. Use python to print a new data file of columns. Call it rays_av.txt. Read it into Excel. Use Excel to plot the values of x-x_av vs y-y_av. Print the plot in Excel.

Submit your python procedures, your .txt file and your .xls file and plots to the TA. Make certain your name appears on the plot, written by the computer.