MA40SA - SINUSOIDAL
USING TI-83 WITH SINUSOIDAL DATA

1. Mode: Ensure your mode is set to radians.

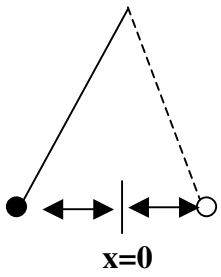
2. Entering Data. Enter data points as follows. (You need at least 4 points)

   a. ensure data are in increasing order by independent variable
   b. Press **STAT** Select **1:EDIT**
   c. Clear Lists 1 and 2 (Cursor to the top of each column and press **CLEAR ENTER**)
   d. Entering independent data in $\mathbf{L_1}$. Enter dependent data in $\mathbf{L_2}$. (the data must be in increasing order by dependent variable)

3. Plotting Data. Plotting data is similar to graphing data.
   a. De-select all **Y=** formulas so they will not graph. The equals sign will be highlighted if they *are* to be graphed.
   b. Select **STAT PLOT** by pressing **2nd Y=**. Select **Plot 1**. Turn on Plot 1. Put plot into the *Scatter Plot* mode. Select the largest *mark* possible.
   c. Press **GRAPH**. You should have a plot of your data. You may need to use **ZOOM 9:ZOOMSTAT** to fit the data.

4. Try entering the following data and plot it:

Data for a swinging pendulum	
Time [secs]	**Distance [cm]**
1.43	-9.76
2.27	-10.14
3.12	12.36
4.19	0.53
4.62	-10.99
5.47	-8.82



5. Sinusoidal Regression[1]. Now that you have your periodic data entered let the TI83 calculate the Sin Curve and the A,B,C, D of Y=Asin(Bx+C)+D. This is a statistical operation, **fitting the best curve to the data**.
   a. Press **STAT** . Select **CALC**. Select **C:SinReg**. Press **ENTER**
   b. The operation **SinReg** appears on the home screen.
   c. Press **VARS**. Select **Y-VARS**. Select **1:FUNCTION**. Select **1:Y1**.
   d. Press **ENTER**
   e. The screen will show you the A, B, C and D for the equation that best matches the data. Of course you should always check for gross errors, especially for Period (B Factor).
   f. Press **GRAPH**. Both your raw data and the best fit curve will appear.

[1] The **SinReg** operation is very powerful. There are additional 'parameters' that can be entered. We are just using the most basic and simple mode of **SinReg** above.