4.8 Notes **Modeling Real-World Data with Polynomial Functions**

Calculator Instructions:

1. To input data, go to STAT→Edit
   x values (independent) goes into L1
   y values (dependent) goes into L2

Note: Check to make sure that values have been put in correctly and that there is an equal number of entries in L1 and L2.

2. Check the graph to see which type of polynomial you have
   go to STATPLOT→ (above the y=)
   for Plot 1 hit ENTER and turn on Plot 1

Important Note: You must remember to turn off the STATPLOTS or you will encounter problems when doing other functions with your calculator!

Hit graph – however you may need to adjust your window (keep in mind the data points you just entered).

From these data points, decide which type of regression you have

3. To calculate your function, go to STAT→Calc
   #4 LinReg if a line (0 turns)
   #5QuadReg if a parabola (1 turn)
   #6CubicReg if degree 3 (2 turns)
   #7QuartReg if degree 4 (3 turns)

4. To paste this equation into your calculator
   Hit y =
   Go to VARS→Statistics→EQ→RegEQ→ENTER
   Hit Graph

Note: If this is a close fit, you should see the curve hitting most of the points, or coming very close.

Once you have done this, you can use your function to make predictions. For example, #1 on the 4.8 Practice worksheet. If the distance is 42 (AU), what is the period (days)? Answer is 101,300.

5. Another way to find out if you have a good fit for your data is to turn on the diagnostics to see the correlation coefficient. When you see the r^2 and the value is very close to 1, then it is a good fit.
   Hit catalog
   Hit Alpha D (or scroll down)
   Hit DiagnosticOn

Note: Redo your STAT→Calc and you will see the r^2. Determine from that if it is a good fit.