Quadratic Regression

In Chapter 3, you learned how to use Linear Regression on your calculator to find the equation of a line. All you needed was two points that were on the line.

You can also use your calculator to find the equation of a parabola, but you need to know <u>three points</u> on the curve to find the correct equation.

Practice Problem
We want to find the equation of the parabola that goes through (1,6), (3, 26) and (-2, 21).

1. Clear all lists in your calculator's memory.
     Press 2nd, MEM, 4, Enter.

2. Create a list of points in your calculator.
     Press STAT, 1. Move the cursor over to L1 and type in the coordinates of the points. It should look like this when you are done:

L1	L2
1	6
3	26
-2	21

3. Calculate the quadratic equation.
     Press STAT, CALC, 5, ENTER.

     You should see this on your screen:
         QuadReg
         $y = ax^2 + bx + c$
         $a = 3$
         $b = -2$
         $c = 5$

4. Write the equation of the parabola in standard form. Your answer should look like this:
     $y = 3x^2 - 2x + 5$

Homework
Use your calculator to find the equations for the parabolas that go through each set of points.

   1. (1, 2), (-2, 23), (3, 8)

   2. (-4, 19), (6, -6), (12, -45)

   3. (10, 1), (20, 22), (-30, -3)

   4. (0, 5), (4, 1), (-3, -13)