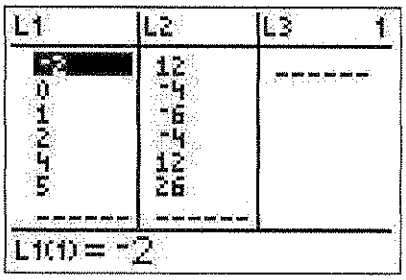
Using the TI-83 or TI-84 for Regression

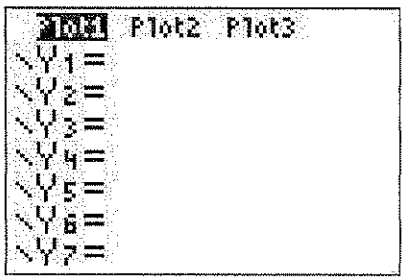
1. Enter the data into the calculator

- Choose the [STAT] key
- Choose [1.Edit] from the [EDIT] menu
- Enter the x-values into [L1]
- Enter the y-values into [L2]

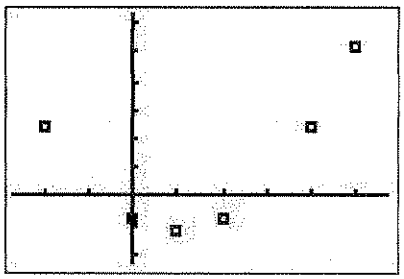


2. View the scatter plot

- Choose the [Y=] key
- Turn on [Plot1]

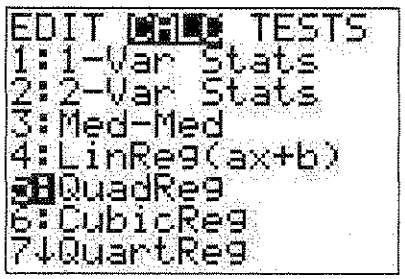


- View the graph with [GRAPH]
- If you don't see all the points, choose [ZOOM] then [9.ZoomStat]



3. Get the equation

- Choose the [STAT] key
- Select [CALC] from the menu across the top
- Choose a regression from the list
- Press [ENTER] twice

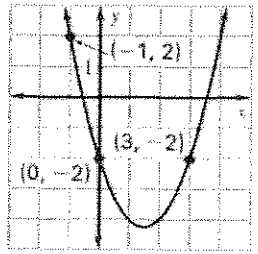


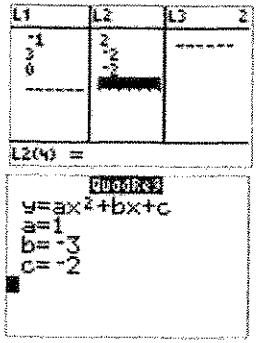
Quadratic Regression

Regression:

Example 1

Write a quadratic function in standard form



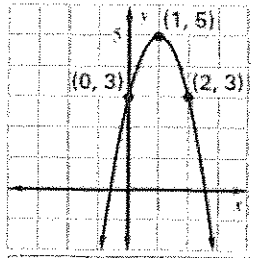


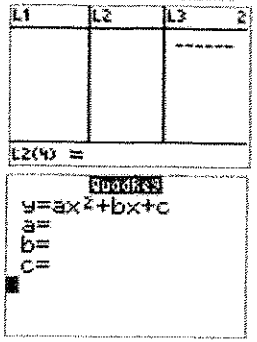
Graphing Calculator

STAT → Edit

Enter x's in L1, y's in L2

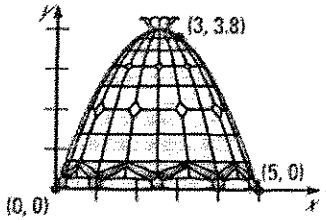
STAT → Calc → QuadReg



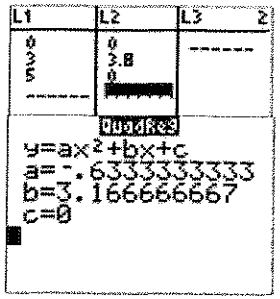


Example 2

Use quadratic regression to find the best-fitting quadratic model



A huge tiffany lamp hangs from the top of an elegant stairwell in an old opera house downtown. The base of the shade is 5 feet in diameter. The top is about 3.25 inches above the vertex of the parabola shown in the graph. What is height of the tiffany lamp?



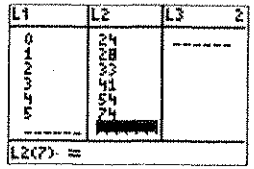
Example 3

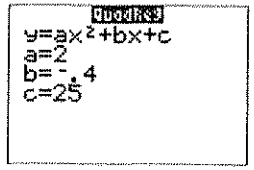
Use quadratic regression to find the best-fitting quadratic model and make predictions

Youth Football The following table shows the number of participants y in the local youth football program from 2000 to 2005. Assume that t is the number of years since 2000.

Year, t	0	1	2	3	4	5
Participants, y	24	28	33	41	54	74

Using the model, how many participants are projected for 2008?

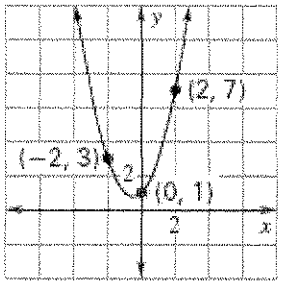
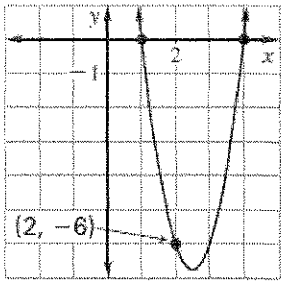
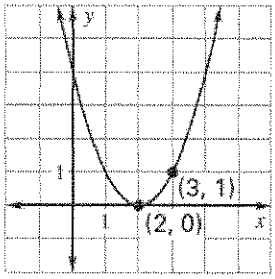




Name: Period: Date:

Practice Worksheet: Quadratic Regression

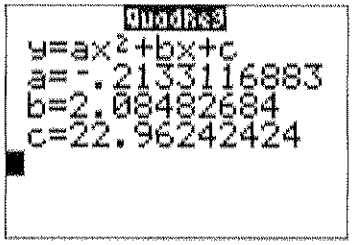
Write the quadratic function in standard form whose graph passes through the given points.

1] $(1,-2),(-2,1),(3,6)$	2] $(2,6),(-2,-2),(1,1)$	3] $(-2,7),(-1,3),(3,7)$
4] 	5] 	6] 

7] Find a function of the form $y = ax^2 + bx + c$ whose graph passes through (1, -4), (-3, -16) and (7, 14). Explain what the model tells you about the points.

The table shows the population of a town from 1996 to 2004. Assume that t **is the number of years since 1996** and P is measured in thousands of people.

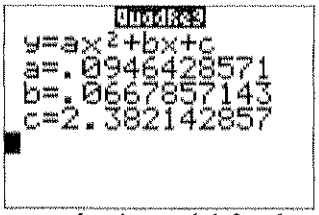
Year, t	0	1	2	3	4	5	6	7	8
Population, P	22.8	25.0	26.5	27.1	27.8	28.1	27.9	26.9	26.1



8] Use the results from the regression shown to find the best-fitting quadratic model for the data. Round to **two** decimal places. Then use the model to find the population in 2007. Show your work.

The table shows the operating costs of a small business from 2000 to 2005. Assume that t is the number of years since 2000 and C is the cost in thousands of dollars.

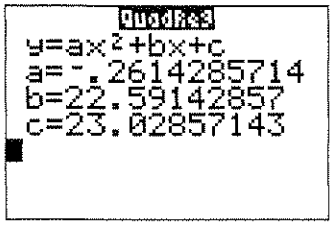
Year, t	0	1	2	3	4	5
Operating costs, C	2.3	2.6	3.1	3.3	4.0	5.2



9] Use the results from the regression shown to find the best-fitting quadratic model for the data. Round to **two** decimal places. Then use the model to find the operating cost in 2007. Show your work.

A pumpkin tossing contest is held each year in Morton, Illinois, where people compete to see whose catapult will send pumpkins the farthest. One catapult launches pumpkins from 25 feet above the ground at a speed of 125 feet per second. The table shows the horizontal distances (in feet) the pumpkins travel when launched at different angles.

Angle (degrees)	20	30	40	50	60	70
Distance (feet)	372	462	509	501	437	323



10] Use the results from the regression shown to find the best-fitting quadratic model for the data. Round to **two** decimal places. Then use the model to determine at what angle the pumpkin travels the farthest. Show your work.

The bar graph shows the average number of hours per person per year spent on the Internet in the United States for the years 1997-2001. **Let x be the number of years SINCE 1997.**

11] Use a graphing calculator to find the best-fitting quadratic model for the data. Round to **two** decimal places.

12] Use your model to predict the average number of hours a person will spend on the Internet in 2010. Show your work.