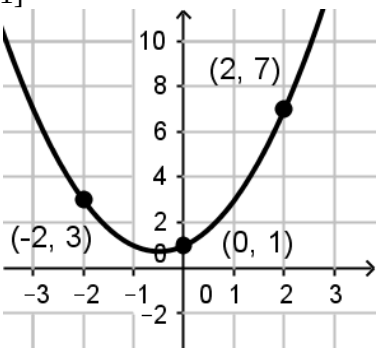
Name: Period:

First Score:	First attempt due:	Final Score:
	Final corrections due:	

<u>Practice</u>:
Quadratic Regression

Write the quadratic function in standard form for each parabola graphed below and use it to find the missing information.

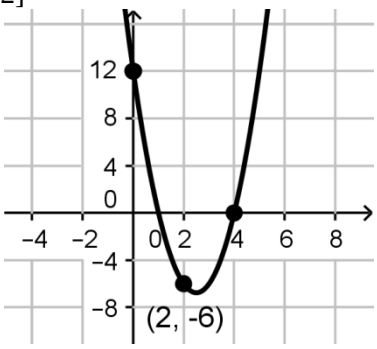
1]



y =

Find the coordinates of the vertex.

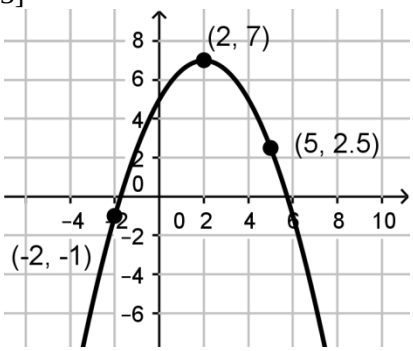
2]



y =

(-2, _____) and (5, _____) are also on the graph.

3]



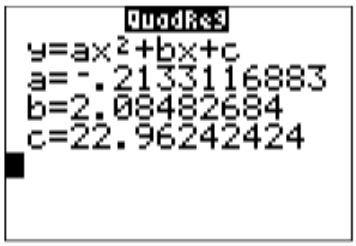
y =

Find the coordinates of the y-int.

4] 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 **<u>is the number of years since 1996</u>** 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



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

The table shows the operating costs of a small store 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	3	5
Operating costs, *C*	14.8	9.1	3.3	5.1

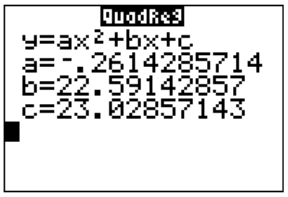
6] Find the best-fitting quadratic model for the data. Round to **two** decimal places.

7] Use the model to find the lowest operating cost of the business from 2000 to 2005. Show your work.

8] Operating costs were highest when the business opened due to the cost of purchasing all the shelving, display cases, and registers. Then the cost to operate the business started to decline. What are some factors that could cause the operating costs for the business to begin rising again?

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



9] Use the results from the regression shown to find the best-fitting quadratic model for the data. Round to **two** decimal places.

10] 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 spent on the Internet in 2015. Show your work. How does this compare to the actual average of 13 hours per week in 2015?