Algebra 2
5.1-5.3 Review

Name_____

1. Ask your calculator for a linear and a quadratic model for the following data.

Money Spent in the U.S. on Personal Technology

Year (0 = 1970)	0	10	20	22	24	26
Billions of $	8.8	17.6	53.8	61.2	78.5	89.7

linear model: _____ quadratic model: _____

Which one is a better fit? _____ How do you know? _____

2. Use a linear system to find the quadratic model containing the following points: (–2, 24), (–1, 13), (3, 9). Show your linear system.

5. The cross section of a hill can be modeled by $h(x) = -0.0025x^2 + 1.25x$ where h(x) is the height and x is the distance in feet. Graph the function on your calculator. What can give you a clue about the window settings? (*the y-intercept and the vertex!*)

x-min: _____ to x-max: _____ y-min: _____ to y-max: _____

How wide is the hill? (from the start, over the peak, and down the other side) _____

What is the maximum height of the hill? _____

6. The number of dolls a toy company sells can be modeled by $-4p + 80$, where p is the price of a doll. What price will maximize revenue? What is the maximum revenue?

9. The equation $h = 40t - 16t^2$ describes the height h, in feet, of a ball that is thrown straight up as a function of the time t, in seconds, that the ball has been in the air.

At what time does the ball reach its maximum height?

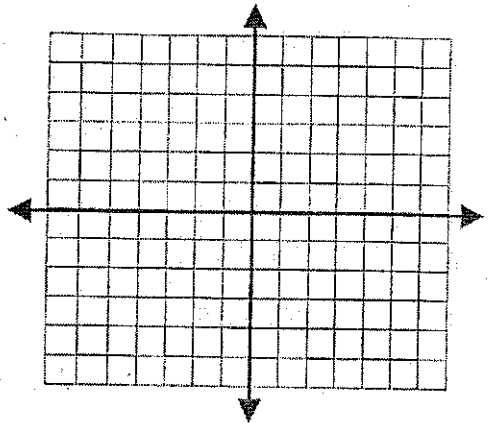
What is the maximum height?

10. Find the minimum value of the function $f(x) = x^2 + 6x - 1$.

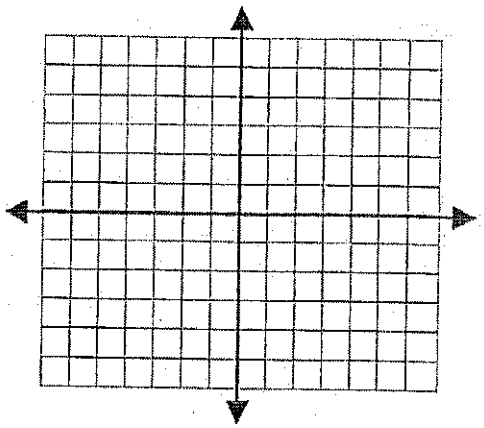
8

4. Do not use a calculator. Graph the following. Tables of x and y-values are not needed. You must plot the 5 "key" points, wherever they end up after transformation.

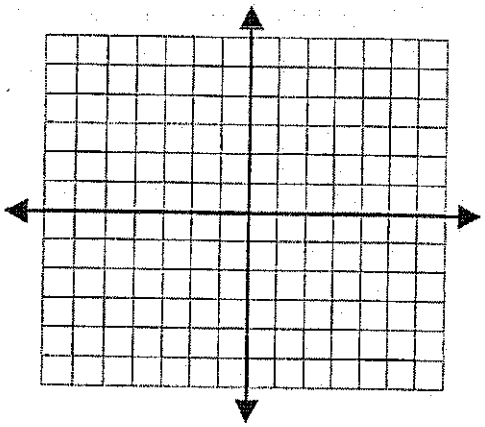
a. $f(x) = -(x+1)^2 + 4$



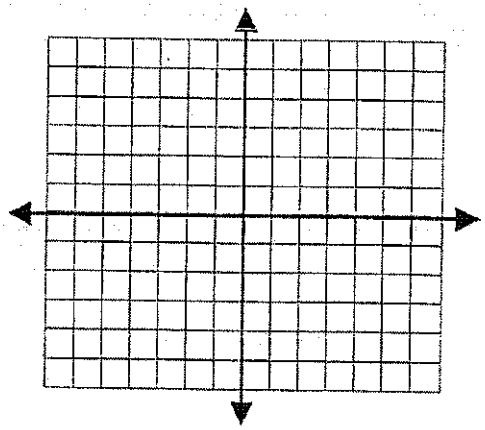
b. $f(x) = (x-3)^2$



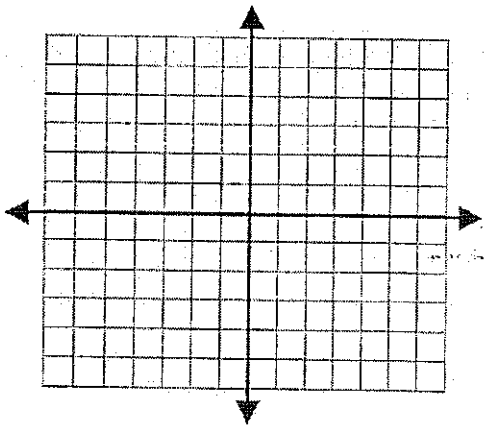
c. $f(x) = -(x+4)^2 - 2$



d. $f(x) = 2x^2 - 5$



e. $f(x) = \frac{1}{2}(x-2)^2$



f. $f(x) = -3(x-1)^2 + 6$