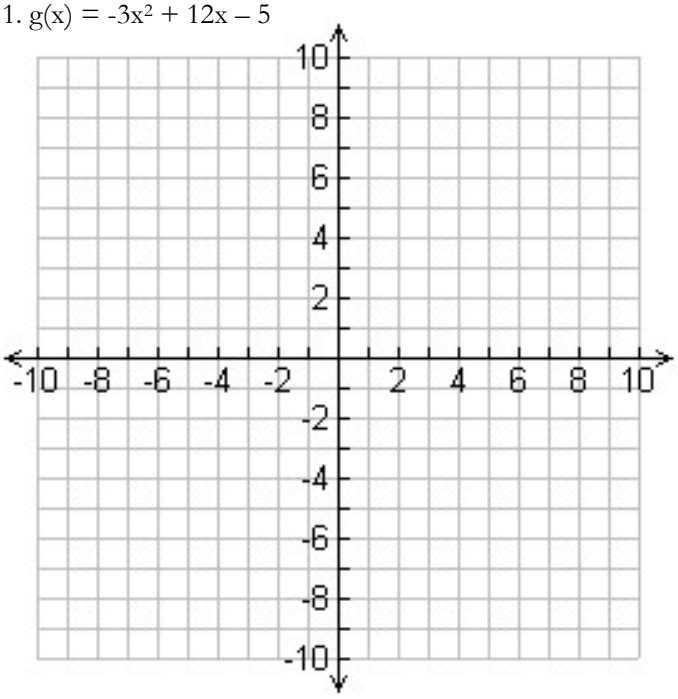
Name:_____ Period:_____ Date:_____

3.1 Practice Problems

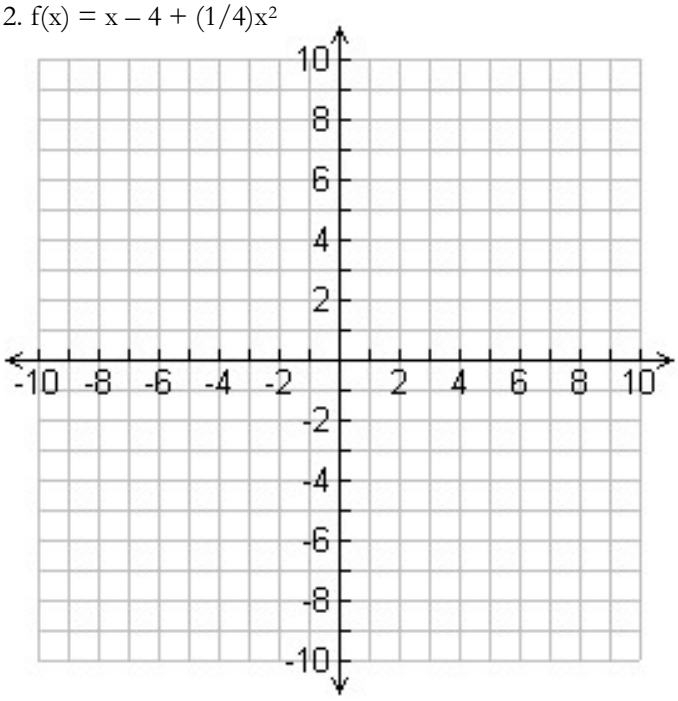
Without a calculator, sketch a graph given the function including the vertex, y-intercept and at least two additional points. Then write the standard (vertex) form of the quadratic function.

1. $g(x) = -3x^2 + 12x - 5$



Vertex Form:_____

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



Vertex Form:_____

With a graphing calculator, graph the following function and find the minimum or maximum, x – intercepts, y – intercept, end behavior, intervals of increasing and decreasing.

3. $h(x) = .9x^2 - 12.3x - 10$

Vertex:

Circle: Min or Max

x – intercepts:

y – intercept:

End Behavior:

Interval of increasing:

Interval of decreasing:

4. $r(x) = 10x^2 - 220.5x + 6000$

Vertex:

Circle: Min or Max

x – intercepts:

y – intercept:

End Behavior:

Interval of increasing:

Interval of decreasing:

Write the quadratic function that has the indicated vertex whose graph passes through the given point.

5. Vertex: (-4, 2); Point (7, 6)

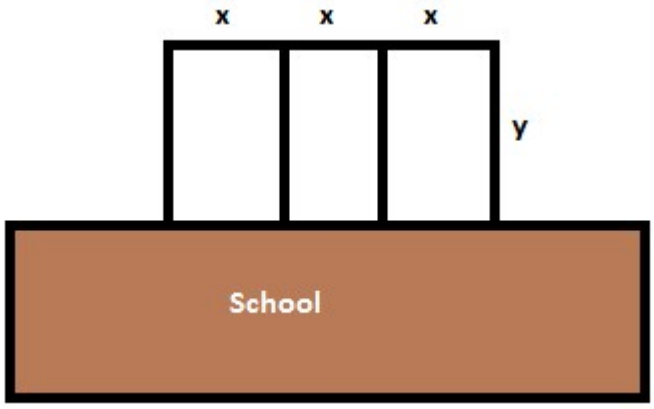
6. Vertex: (-1/4, 3/2); Point (-2, 0)

Write the quadratic function with the given information in standard (expanded) form.

7. zeros: x = -7, 1/2

8. x – intercepts: (0, 0), (-7/3, 0)

9. A middle school wants to fence in three equally spaced areas, one for each grade, for students to play outside during recess. If they have enough in the budget for only 500 feet of fencing, and they are building it against the school (as shown in the figure) what should the dimensions be of a play space designated for one of the grades in order to maximize the area? No fence is needed right against the wall of the school. You may use a calculator.



10. With a graphing calculator, a calculator company has a daily production cost of $C = 50,000 - 55x + 0.0225x^2$ (in dollars) and x is the number of units produced. How many calculators should be produced each day to yield a minimum cost? What is the minimum cost?