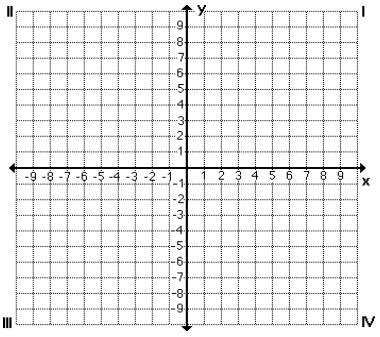
Name_____

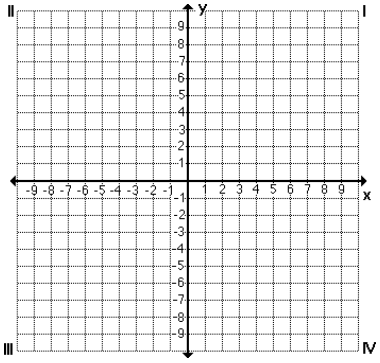
Precalculus Unit 2: 2.1 Homework
Quadratic Functions

For problems 1.4 identify the vertex and the x-intercepts and use them to sketch the graph.

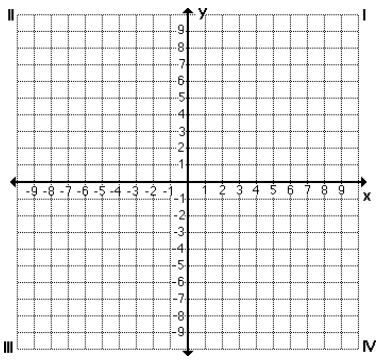
1. $f(x) = (x+4)^2 - 3$



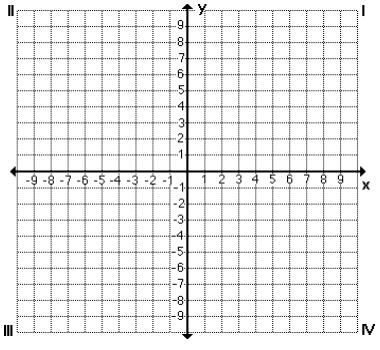
2. $f(x) = 3x^2 + 7x - 6$



3. $f(x) = x^2 - 8x + 16$



4. $f(x) = -4x^2 - 4x + 5$



For problem 5 use your calculator to find the vertex and the x-intercepts for the given function.

5. $f(x) = -2x^2 + 16x - 31$

   Vertex:

   X-intercepts:

For problem 6, write the standard form of the quadratic equation ($y = a(x-h)^2 + k$) for the given point and vertex.

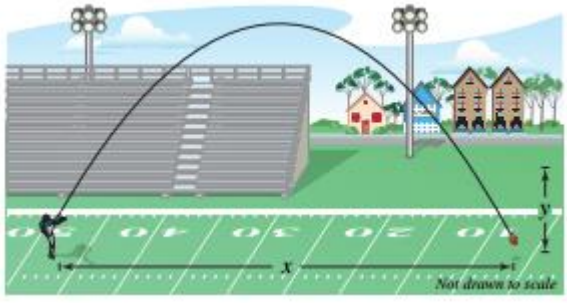
6. Passes through $(2,8)$ with a vertex of $(4,-1)$.

For problem 7, find two quadratic functions, one that opens upward and one that opens downward, with the given zeros.

7. Zeros: $x = -1 \; and \; x = 3$

Answer all parts of number 8 algebraically. You can use the calculator to check.

8. The height *y* (in feet) of a punted football is approximated by $y = \frac{-16}{2025}x^2 + \frac{9}{5}x + \frac{3}{2}$ where *x* is the horizontal distance (in feet) from where the football is punted.



   a) How high is the football when it is punted?

   b) What is the maximum height of the football?

   c) How far from the punter does the ball strike the ground?