121-G12 Quiz 7, 3.1, 3.2

Fall, 2012 Name_____

This is Due Monday, October 8th at the beginning of class.

1. (3.1) Write the quadratic functions in the form $y = a(x-h)^2 + k$ and sketch its graph. Your graph should be "true to the essence of the parabola" and include the following points, clearly labeled as ordered pairs on the graph (and this is the last time I'm telling you how to label key points).

   i. Vertex

   ii. Any *x*- and *y*-intercepts

a. $y = x^2 + 4x$

b. $y = 3x^2 - 12x + 1$

2. Solve the quadratic inequalities:
   a. $3x^2 - 4x - 4 \le 0$
   b. $5x - x^2 < 4$

3. 3.2 Let $f(x) = x^4 + x^3 - 11x^2 + 13x + 1$.
   a. Divide $f(x)$ by $g(x) = x - 2$. Use synthetic division. Express your result in the form $f(x) = g(x) \cdot q(x) + r$. $q(x)$ is the *quotient* and $r(x)$ is the remainder.

   b. Find $f(2)$. Do you notice anything? If so, what?