Alg2 Unit 1 HW #8 Name:_____ Period: _____

1. My sister and I are launching water balloons off our back deck. The equation that models this situation is: $h(t) = -16t^2 + 28t + 18$, where *t* is time in seconds, and *h* is the height in feet.

   a. How tall is the deck?

   b. What is the maximum height of the water balloon?

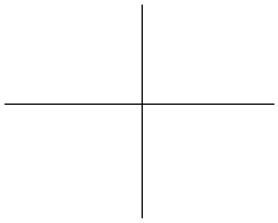
   c. How long will it take the balloon to hit the ground?

2. Find the solutions. Leave your answers in simplest radical form.
   a. $y = -2x^2 + 6x - 9$ b. $y = 3x^2 - 24x + 48$

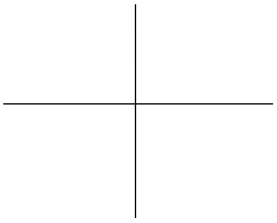
3. Simplify: a. $\sqrt{96}$ b. $\sqrt{-240}$

   c. $i^{99}$ d. $(2 - 7i)^2$

4. Sketch a quadratic with the following features:
   a. Quadratic with vertex at (7, -2) with no real roots

   b. Polynomial with degree of 9, 5 real roots, and a negative leading coefficient

For #5 and #6, simplify and put in descending order. Then find the following:

| | |
|---|---|
| 5. $(3x-11)(3x+11)$ | Circle one: Monomial/Binomial/Trinomial/Polynomial<br>Degree:<br>Leading Coefficient (circle one): + or -<br>End behaviors: L: R: |
| 6. $(-7x+4x^3-2)-(9x^3+7x+9)$ | Circle one: Monomial/Binomial/Trinomial/Polynomial<br>Degree:<br>Leading Coefficient (circle one): + or -<br>End behaviors: L: R: |

7. Factor. $144x^2-1$

8. Solve by factoring. $2x^2-3x-14=0$

9. Write the equation given the roots.

a. $x=6-i$

b. $x=-2i,\quad x=5$