Alg2 Unit 1 HW #10 Name:_____ Period: _____

1.
   a. Write the equation of the line that passes through the points (4, 6) and (2, 3).

   b. Write the equation of the line that is perpendicular to the line in part A and passes through $(6, 2)$.

2. Write the equation of a parabola with a double root of -3 and passes through (0, -5).

   a. Does this parabola open up or down? How do you know?

3. A professional diver jumps off the diving platform and lands in the pool below. The equation that models this situation is $h(t) = -16t^2 + 20t + 40$, where "h(t)" represents the height in feet and "t" represents time in seconds.

   a. What is the divers maximum height above the water?

   b. How long does the diver have before she hits the water?

   c. What height is the diving platform?

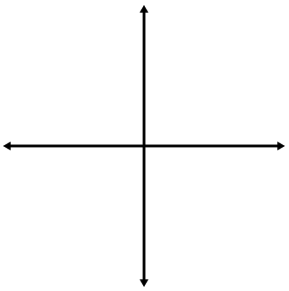
4. Find the zeroes.
   a. By hand. Leave answers in simplified radical form.
      $y = 3x^2 - 7x + 5$
   b. Use your calculator.
      $y = .5x^3 - 4x - 2$

5. Simplify:

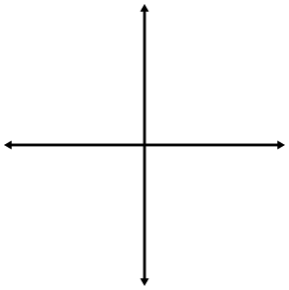
   a. $\sqrt{-112}$ b. i^{37} c. $(7 - 4i) - (2 + 3i)$ d. $(5 - 4i)(2 + 3i)$

6. Sketch the polynomial with the given features. If the polynomial cannot be drawn, explain why.

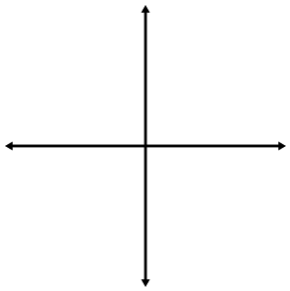
a. Degree 4 , 2 Real Roots, LC -



b. Degree 2 , 1(double) real root, negative "a" value



c. Degree 5 , 5 Imaginary Roots, LC -



7. Decide whether or not the following are polynomials in one variable. If they are not, explain why.

a. $2x - x^{-2}$

b. $\frac{1}{5}a^4 - 5a + \frac{4}{5}a^2$

c. $6y^4 - 3 + 7z^{\frac{3}{4}} - 5x$

14. Use the table of values to answer the following questions:

X	Y
-4	10
-3	4
-2	2
-1	3
0	5
1	8
2	12
3	2
4	-4
5	0
6	10

a. State the minimum degree possible

b. List the real roots (either exactly or between 2 integers)

c. State the number of imaginary roots

d. State the number of turning points

e. State the number of relative minimum(s)

f. State the number of relative maximum(s)

g. State the end behaviors

left: _____ right: _____

h. State whether the leading coefficient is positive or negative? Explain.

15. Write the equation of a polynomial with the real roots of 4, -1, and -3 and passes through (1, -6).