MATH ANALYSIS I HONORS
Review for chapter 1 test (2 day test- 100 points) Name_____
Quadratics

1. Find the points of intersection, if any exist, for the following parabola and line. Do so by graphing by hand and confirm algebraically.

$y = x^2 - 4$ $2x - y = 5$

2. Find the discriminant of $y = x^2 + 4x + 4$. What does it tell you about the roots and graph?

3. Sketch the parabola $y = -x^2 + 4x - 4$
Find and label the following:
vertex
x-intercept(s)
y-intercept
axis of symmetry

4. Sketch the parabola $y = (x - 3)^2 + 2$
Find and label the following:
vertex
x-intercept(s)
y-intercept
axis of symmetry

5. Graph the following by hand. Estimate the point(s) of intersection. Then, algebraically find the point(s) of intersection.
$2x - y = -2$
$y = -x^2 + 4x + 1$

6. Using a graphing calculator, find the coordinates of the root(s) and vertex of the parabola and the point(s) of intersection of the line and parabola. Round to 3 decimal places.

$y = x^2 - 6x - 2$
$y = -2x + 4$

7. Use the given values of the function to find an equation of the form $f(x) = ax^2 + bx + c$.

$f(1) = 1$ $f(2) = 8$ $f(3) = 23$

8) Simplify

a) $\sqrt{-90} =$

b) $(4-3i)(5+2i) =$

c) $i^{59} =$

d) $(5-3i)^2 =$

e) $\dfrac{2+5i}{3-2i} =$

9) Solve each by the indicated method.

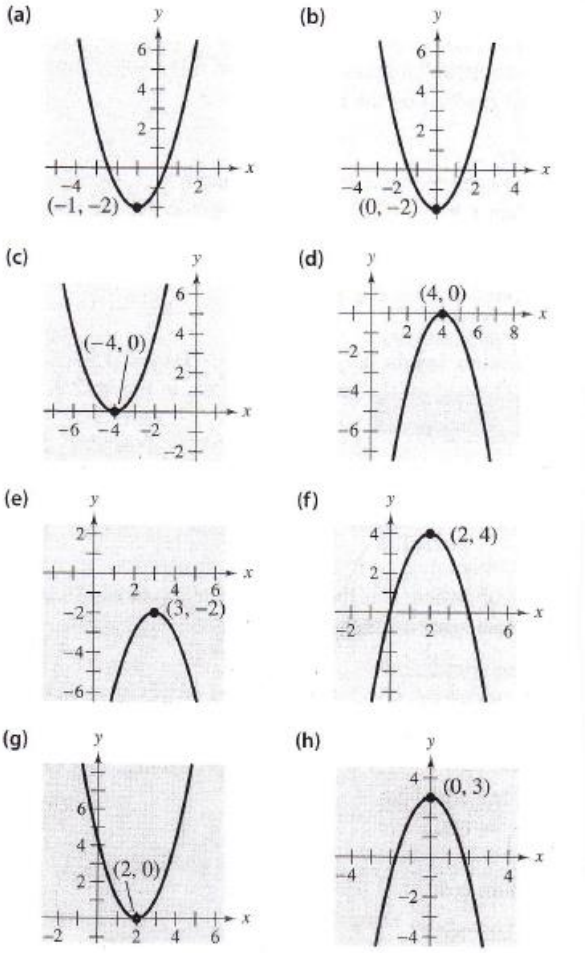
a) (3x -2)(x +4) = 24 by factoring

b) $2x^2 - 4x + 5 = 0$ by completing the square.

c) $7x^2 + x + 1 = 0$ by the quadratic formula.

d) $\dfrac{2x}{x-4} + \dfrac{4}{x+4} = \dfrac{-32}{x^2-16}$ by any method.

In Exercises 1–8, match the quadratic function with its graph. [The graphs are labeled (a), (b), (c), (d), (e), (f), (g), and (h).]



1. $f(x) = (x-2)^2$
2. $f(x) = (x+4)^2$
3. $f(x) = x^2 - 2$
4. $f(x) = 3 - x^2$
5. $f(x) = 4 - (x-2)^2$
6. $f(x) = (x+1)^2 - 2$
7. $f(x) = -(x-3)^2 - 2$
8. $f(x) = -(x-4)^2$

10) Find the vertex, axis of symmetry, x and y intercepts and graph the function:
$y = x^2 + 2x - 15$

11) Find the discriminant. What does it tell you about the parabola?
$y = x^2 - 9$

12) Find the equation of the parabola with x intercepts at 1 and -5 and y-intercept at 15.