Name Key Date _____ Pd ____

Chapter 3 Test Review CYU

☑ *Use when you get it right all by yourself*

S *Use when you did it all by yourself, but made a silly mistake*

H *Use when you could do it alone with a little help from teacher or peer*

G *Use when you completed the problem in a group*

X *Use when a question was attempted but wrong (get help)*

N *Use when a question was not even attempted*

CONCEPTS	BASIC	INTERMEDIATE	ADVANCED
Discriminant: value, #, & type of solutions	1		
Quadratic Formula	2		
Solving a system by graphing	3	3	3
Solving a system by substitution	3	3	3
Solving a system by elimination	3	3	3
Solving & graphing a quadratic inequality algebraically	4	4	4
Solving quadratic inequality systems by graphing	5	5	5
Solving quadratics: factoring, completing the square, square root method, graphing	6	6	6
How to use your calculator	All	All	All
Complex number operations (+ - *)	7	7	7

1) Use the discriminant to determine the number and type of solutions for the following quadratic equations. Give the value of the discriminant too.

a. $v^2 + 2v - 8 = 0$ b. $8x = -4 - 4x^2$ c. $2x = x^2 + 2$

36 0 -4

2 real roots 1 real double root 2 imaginary roots

2) **Use the quadratic formula to solve the following quadratic equations.** Be sure to write you're a, b, c, the set up, and your solutions in correct notation.

a. $v^2 + 2v - 8 = 0$ b. $8x = -4 - 4x^2$ c. $2x = x^2 + 2$

$a=1 \quad b=2 \quad c=-8$ $a=4 \quad b=8 \quad c=4$ $a=1 \quad b=-2 \quad c=2$

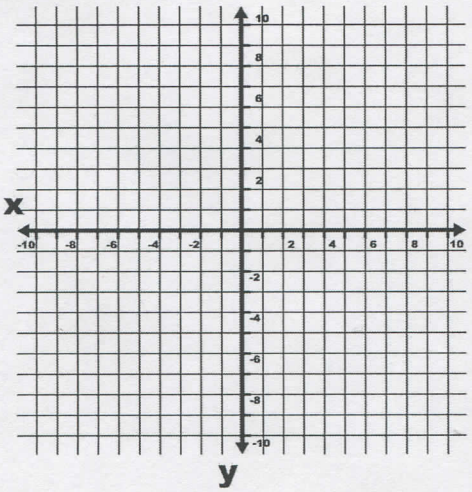
$x = \frac{-2 \pm \sqrt{(2)^2 - 4(1)(-8)}}{2(1)}$ $x = \frac{-8 \pm \sqrt{8^2 - 4(4)(4)}}{2(4)}$ $x = \frac{-(-2) \pm \sqrt{(-2)^2 - 4(1)(2)}}{2(1)}$

$x = 2, -4$ $x = -1$ $x = 1 \pm i$

3) **Solve the systems by graphing, substitution, and/or elimination. <u>Be sure to know how to use all methods.</u>**

a. $y = x + 2$

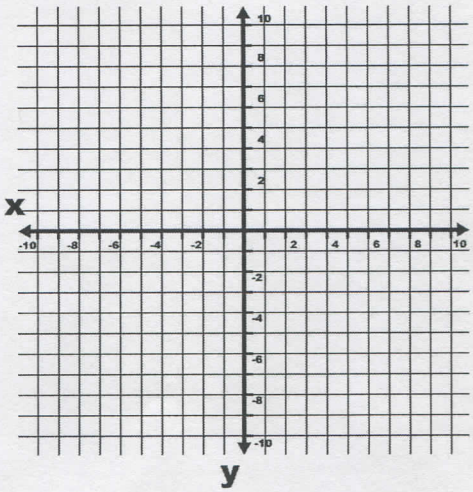
$y = 0.5(x + 2)^2$



$(0,2)$ & $(-2,0)$

b. $y = (x-3)^2 + 5$

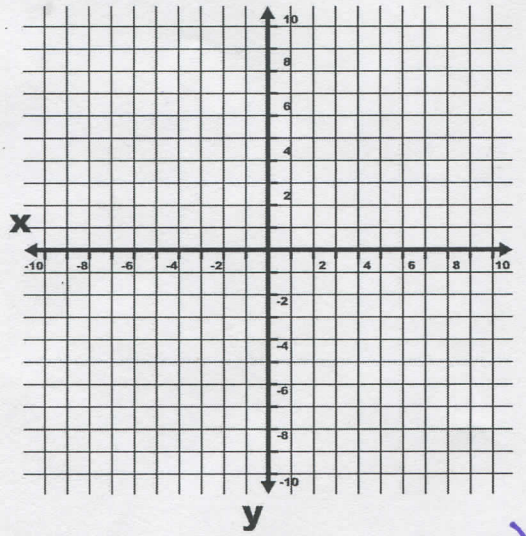
$y = 5$



$(3,5)$

c. $y = -2x^2 - 9$

$y = -4x - 1$

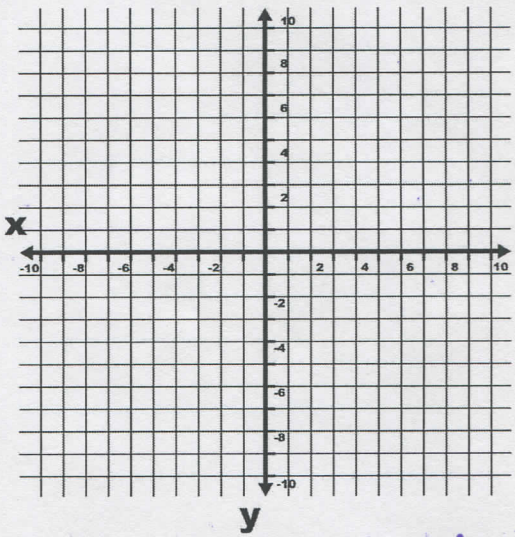


$(1 \pm i\sqrt{3}, -5 \pm 4i\sqrt{3})$

$\therefore$ no solution

d. $y = (x-2)^2$

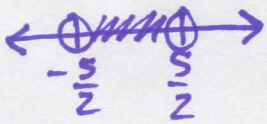
$y = -x^2 + 4x - 2$



$(3,1)$ & $(1,1)$

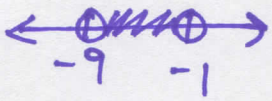
4) **Solve the quadratic inequality <u>algebraically</u>. Graph & write your solution in interval notation. Be sure to check for extraneous solutions.**

a. $4x^2 < 25$



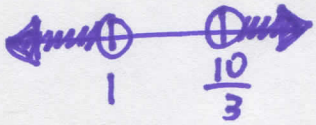
$(-\frac{5}{2}, \frac{5}{2})$

b. $x^2 + 10x + 9 < 0$



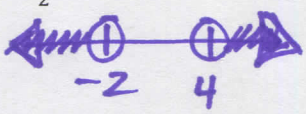
$(-9, -1)$

c. $3x^2 - 13x > -10$



$(-\infty, 1) \cup (\frac{10}{3}, \infty)$

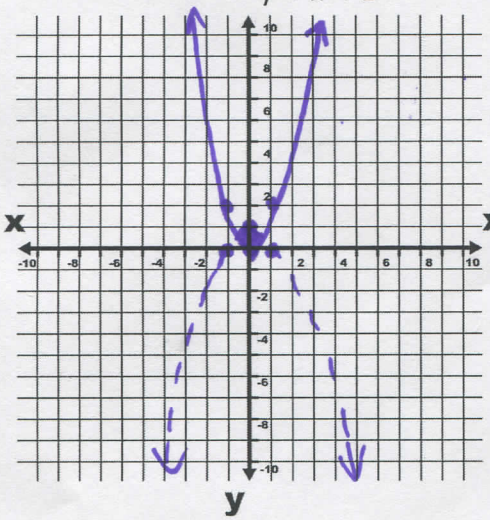
d. $\frac{1}{2}x^2 - x > 4$



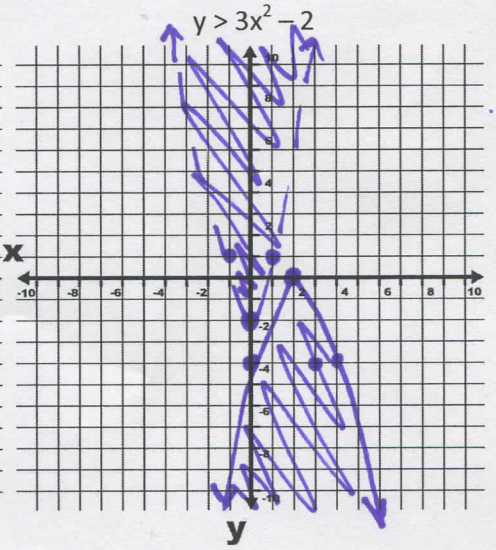
$(-\infty, -2) \cup (4, \infty)$

5) **Solve the system of inequalities by <u>graphing</u>.**

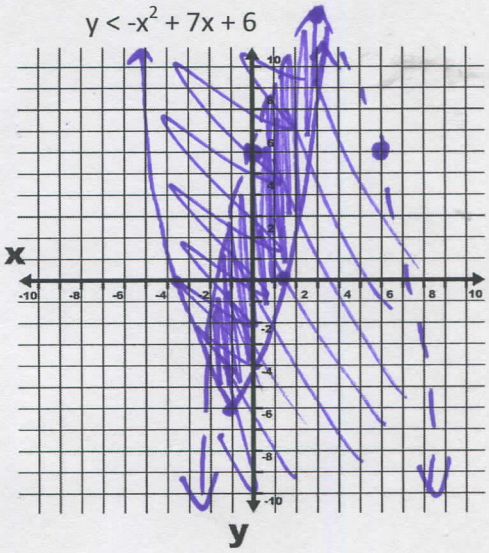
a. $y \geq 2x^2$
$y < -x^2 + 1$



b. $y \leq -x^2 + 4x - 4$
$y > 3x^2 - 2$



c. $y \geq 2x^2 + x - 5$
$y < -x^2 + 7x + 6$



6) **Solve the following quadratics using any method you choose. (factoring, graphing, completing the square, square root method, quadratic formula or calculator) <u>Be sure to know them all!</u>**

a. $0 = x^2 + 6x + 9$ factor

$x = -3$

b. $x^2 - 8x = -12$ complete the □

$x = 6, 2$

c. $\frac{d^2}{20} + 8 = 15$ Square Root

$d = \pm 2\sqrt{35}$

d. $-(x + 9)^2 = 64$ Square Root

$x = -9 \pm 8i$

e. $x^2 - 1.75 = 0.5$ Square Root

$X = \pm 1.5$

f. $0 = x^2 + 22x + 121$ Quadratic Formula

$X = -11$

7) **Perform the indicated operations with complex numbers. <u>Simplify completely! Never should have an i bigger than a power of 1 in your answer.</u>**

a. $(6 - i) - (7 + 3i)$

$-1 - 4i$

b. $(2 - 15i) - (4 + 5i)$

$-2 - 20i$

c. $2i(7 - i)$

$14i + 2$

d. $3i(-5 + i)$

$-15i - 3$

e. $(3 - 2i)(4 + i)$

$14 - 8i$

f. $(9 + 5i)(9 - 5i)$

106

8) **Other stuff you need to know**

a. Review your quiz, notes, dailies, and CYU's
b. Know the key characteristics (vertex, roots, zeros, solutions, axis of symmetry)
c. Completing the square and knowing how to fill the "c" or the box
d. Projectile Motion Real World Problems
    a. a = -16 for feet
    b. a = -4.9 for meters
    c. V_0 = initial velocity
    d. h_0 = initial height

CYU Reflection: *How far can you go: basic, intermediate, or advanced?*

Rate your mastery level!

How confident are you with the skills this CYU covered? Circle the