Chapter 3 Review #1 NAME: _____

I.	Factoring
II.	Completing the Square
III.	Quadratic Formula
IV.	Square Roots

Solve using any method. List what methods you can use to solve each one.

1. $x^2 - 2x - 15 = 0$ — Not 3x — I, II, III — $x = 5, -3$

2. $3x^2 - 4x - 2 = 0$ — III — $\frac{4 \pm 2\sqrt{10}}{6}$ — $\frac{2 \pm \sqrt{10}}{3}$

3. $4x^2 - 121 = 0$ — I, III, IV — $\sqrt{x^2} = \pm\sqrt{\frac{121}{4}}$ — $x = \pm\frac{11}{2}$

4. $(x-5)^2 = -4$ — IV — $= \pm 2i$ — $5 \pm 2i$

Factor:

5. $3x^2 - 10x - 8$ — $(3x+2)(x-4)$

6. $25x^2 + 30x + 9$ — $(5x+3)(5x+3)$

7. $36x^2 - 81$ — $9(4x^2-9)$ — $9(2x+3)(2x-3)$

Find the discriminate and describe the number and type of solutions to the quadratic equation.

8. $3x^2 - 25x + 13 = 0$ — $(-25)^2 - 4(3)(13)$ — 469 — 2 REAL

9. $5x^2 - 7x + 9 = 0$ — $(-7)^2 - 4(5)(9)$ — -131 — 2 IMAGINARY

Simplify:

10. $\sqrt{-98}$ — $7i\sqrt{2}$

11. $\sqrt{-529}$ — $23i$

12. $\sqrt{-63}$ — $3i\sqrt{7}$ — $*i^2 = -1$

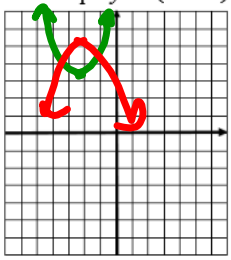
Simplify, then write answer in standard form.

13. $3i - (5 + 2i) - 12i + 15$ — $3i - 5 - 2i - 12i + 15$ — $10 - 11i$

14. $(4 - 5i) - (12 + 9i)$ — $4 - 5i - 12 - 9i$ — $-8 - 14i$

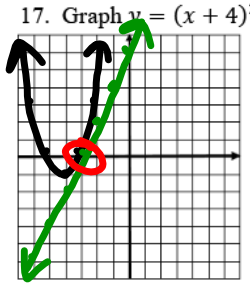
15. $(5 - 2i)(6 + 12i)$ — $30 + 60i - 12i - 24i^2$ — $54 + 48i$

16. Graph $y = (x+2)^2 + 3$ *and* $y = -(x+2)^2 + 5$. Solve the system of equations.



$(-3, 4)\ (-1, 4)$

17. Graph $y = (x+4)^2 - 1$ *and* $y = 2x + 6$. Solve the system of equations.



$(-3, 0)$

18. A tall tower is located in New Jersey City. The equation $f(t) = -16t^2 + 1296$ models the height $f(t)$ (in feet) of an object t seconds after it is dropped from the top of the tower.

a. What is the value of the height $f(t)$ when the object hits the ground? 0ft

b. After how many seconds will the object hit the ground? 9sec

$0 = -16t^2 + 1296$

c. What is the maximum height of the object? 1296 ft

d. What is the height of the object after 5 seconds? 896

$f(5) = -16(5)^2 + 12$

Solve the system of equations.

19. $y = (x-2)^2$ & $y = -x^2 + 4x - 2$

$(x-2)^2 = -x^2 + 4x - 2$

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

$2x^2 - 8x + 6 = 0$

$2(x^2 - 4x + 3) = 0$

$2(x-3)(x-1) = 0$

$x = 3 \qquad x = 1$

$y = (3-2)^2 = 1 \qquad y = (1-2)^2 = 1$

(3,1) (1,1)

20. $x^2 + 6x + y = -10$
$3x^2 + 18x - y = 2$

$4x^2 + 12x = -8$

$4x^2 + 12x + 8 = 0$

$4(x^2 + 3x + 2) = 0$

$4(x+2)(x+1) = 0$

$x = -2 \qquad x = -1$

(-2,-26) (-1,-17)

True or False:

21. A system of equations including a line and a parabola can have only 2 solutions. F (1 OR NONE)

22. A system of equations including two lines can only have 0 or 1 solution. F (INFINITELY MANY)

23. A system of equations including a line and a circle can have up to 4 solutions. F (2)

24. A system of equations including 2 parabolas can have more than 2 solutions. F (UP TO 2)

25. $i^2 =$ -1