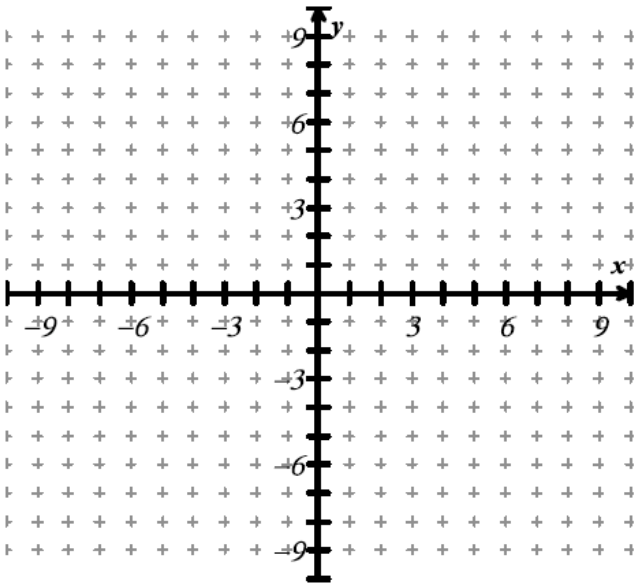
QUADRATIC FUNCTIONS TEST REVIEW

NAME: _____ Score: _____

	Function	Form	Work	Vertex
1	$y=(x+4)^2-3$	Vertex Intercept Standard		
2	$y=(x-2)^2$	Vertex Intercept Standard		
3	$y=-x^2-6x+4$	Vertex Intercept Standard		
4	$y=-3(x-1)(x-5)$	Vertex Intercept Standard		

3. Solve the function graphically.

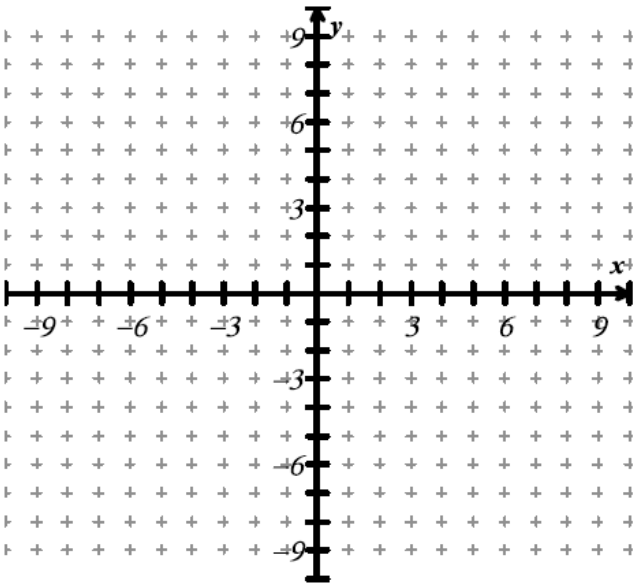
$y = x^2 - 4x - 5$



Vertex: _____ Solutions: _____

4. Solve the function graphically.

$y = 2(x + 1)(x - 3)$



Vertex: _____ Solutions: _____

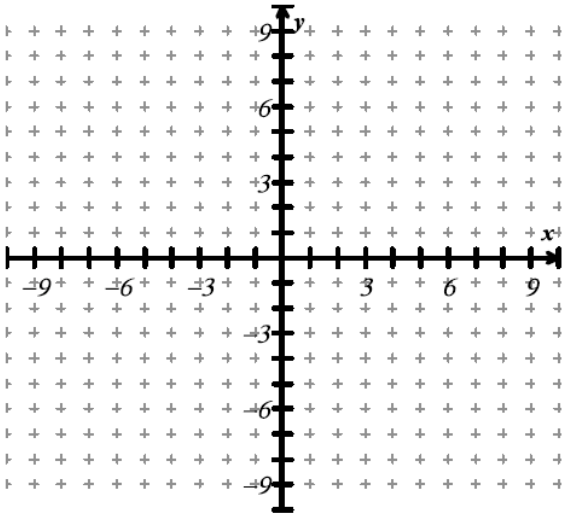
Section 1: Factoring

Factor Completely!

1. $x^2 - 9x + 8$	2. $3x^2 - 48$
3. $16x^2 + 81$	4. $100p^2 - 49p$
5. $j^2 - 10j + 21$	6. $12x^2 - 17x - 5$
7. $24x^2 - 14x - 5$	8. $9x^2 - 48x + 64$

Section 2: Graph the Quadratic Equations

1. $y = -(x + 3)^2 + 4$



Vertex: _____

x - Intercepts: _____

Axis of Symmetry: _____

Y-intercept: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

As $x \to -\infty,\ f(x) \to$ _____

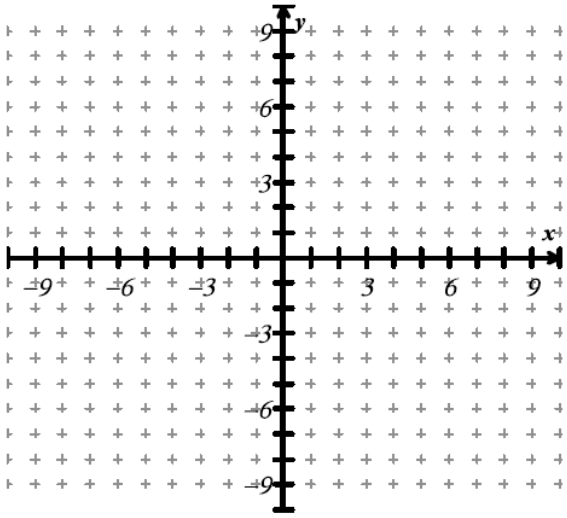
As $x \to +\infty,\ f(x) \to$ _____

Maximum Value of function: _____

Minimum Value of function: _____

Solutions: _____

2. $y = x^2 - 2x - 3$



Vertex: _____

x - Intercepts: _____

Axis of Symmetry: _____

Y-intercept: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

As $x \to -\infty,\ g(x) \to$ _____

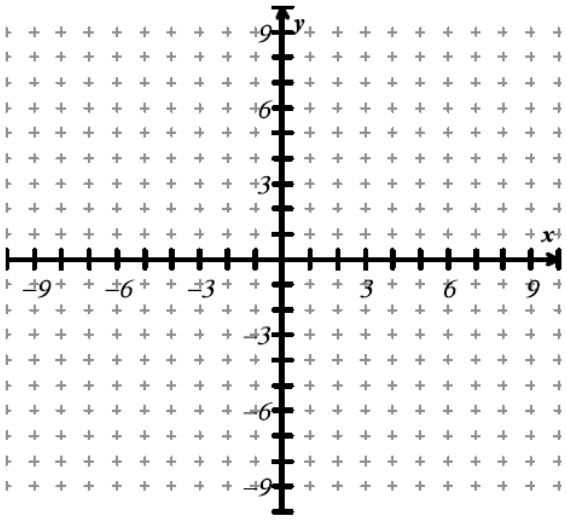
As $x \to +\infty,\ g(x) \to$ _____

Maximum Value of function: _____

Minimum Value of function: _____

Solutions: _____

3. $y = -2x^2 + 8$



Vertex: _____

x - Intercepts: _____

Axis of Symmetry: _____

Y-intercept: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

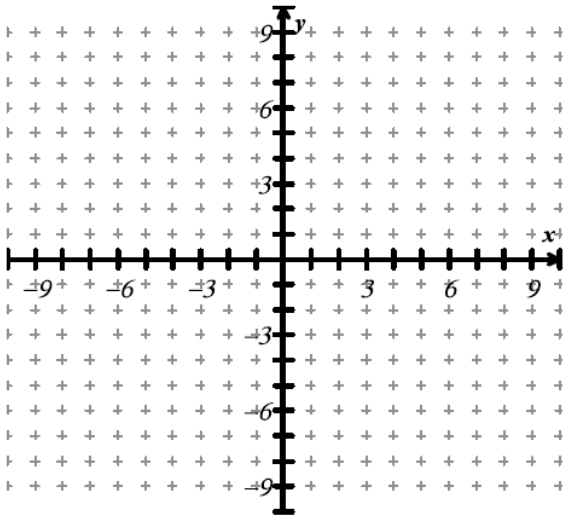
As $x \to -\infty,\ f(x) \to$ _____
As $x \to +\infty,\ f(x) \to$ _____

Maximum Value of function: _____

Minimum Value of function: _____

Solutions: _____

4. $y = (x + 6)(x - 2)$



Vertex: _____

x - Intercepts: _____

Axis of Symmetry: _____

Y-intercept: _____

Domain: _____

Range: _____

Increasing: _____

Decreasing: _____

As $x \to -\infty,\ g(x) \to$ _____
As $x \to +\infty,\ g(x) \to$ _____

Maximum Value of function: _____

Minimum Value of function: _____

Solutions: _____

Simplify.

Section 3: Exponents and Radicals

1. $5a^3 \cdot 3a^{10}$	2. $\left(-7x^3\right)^2$
3. $\dfrac{16x^5y^2}{6x^5y^9}$	4. $-2(evrthngisawsom)^0$
5. $10x^{-2}$	6. $\left(\dfrac{5}{2x}\right)^{-3}$
7. $x^{\frac{1}{5}} \cdot x^{\frac{2}{3}}$	8. $\dfrac{x^4}{x^{\frac{3}{2}}}$

Convert and evaluate.

9. $49^{3/2} =$	10. $125^{-1/2} =$

Simplify.

11. $-\sqrt{48}$	12. $\left(2\sqrt{7}\right)\left(-5\sqrt{3}\right)$
13. $\sqrt{100x^{16}y^{17}}$	14. $\dfrac{\sqrt{16}}{\sqrt{2}}$

15. $5\sqrt{28}+3\sqrt{7}$	16. $\left(4+\sqrt{2}\right)\left(7-3\sqrt{5}\right)$
17. $\frac{3}{\sqrt{5}}$	18. $\frac{1-\sqrt{6}}{2+\sqrt{6}}$

Simplify.

19. $4\sqrt{-27}$	20. $\sqrt{-25}-\sqrt{-49}$
21. $\sqrt{28x^5y^{20}}$	22. $(5 - i) - (-1 + 2i) + 6i$
23. $-3(5 - 4i)$	24. $(2 + 10i)(2 - 10i)$

Rationalize the denominator.

25. $\frac{3}{6-2i}$	26. $\frac{2i-4}{5+i}$

Section 4: Solve the Quadratic Equations

Solve the quadratic equations.

1. $x^2 - 3 = 45$ *(sq. roots)*	2. $4x^2 - 25 = 0$ *(sq. roots)*
3. $2x^2 - 12x = 2x + 60$ *(factor/ZPP)*	4. $2x^2 - 5x - 12$ *(factor/ZPP)*
5. $x^2 + 14x = 3$ *(complete the square)*	6. $x^2 - 4x + 1 = 0$ *(complete the square)*
7. $x^2 + 2x + 8 = 0$ *(Quadratic Formula)*	8. $2x^2 - 4x = 30$ *(Quadratic Formula)*

Solve the quadratic equations (choose a method)

9. $x^2 - 11x + 18 = 0$	10. $2(x + 3)^2 + 10 = 50$
11. $3x^2 + x = 3$	12. $4x^2 + 25 = 0$
13. $9x^2 + 36x = 0$	14. $x^2 + 20x + 104 = 0$
15. $18x^2 + 12x + 2 = 0$	16. $x^2 + 17x + 200 = 13x - 43$

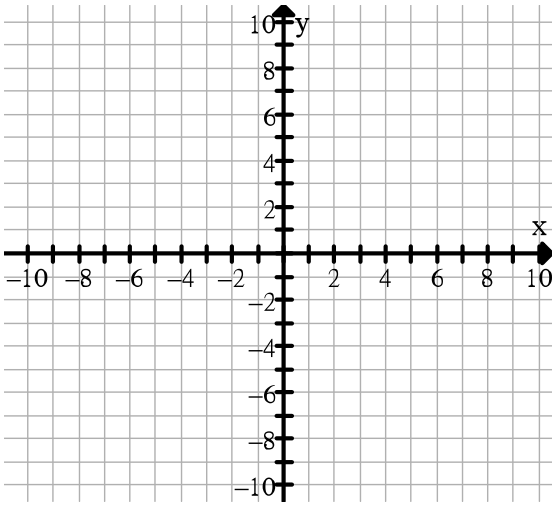
Section 5: Systems

1. A system of equations is: _____

2. The solution(s) to a system is: _____

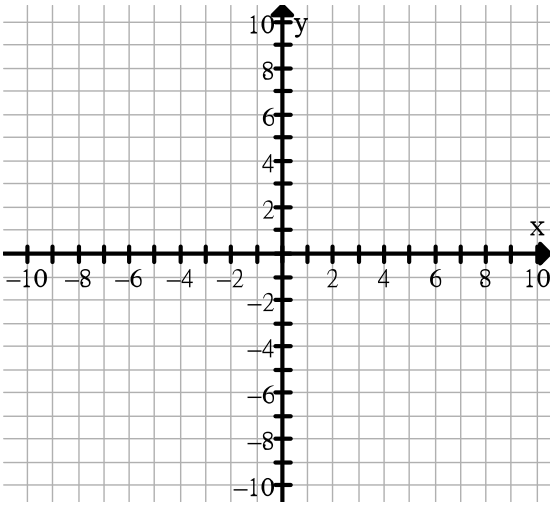
Solve each system by graphing. If there is a solution, write it!! If the equations share infinite solutions, say so!! If they share no solutions, write No Solution. Check your work!!!!

3. $y = -(x + 4)^2 - 1$ $y = 3|x+4| - 5$



Solution: _____

4. $x + y = 4$ $y = -(x + 5)^2$



Solution: _____

Use substitution to find the solutions to the systems. Then CHECK with a calculator!!

5. $y = x^2 - 7x + 4$ $y = x - 3$

6. $y = x^2 - 5x + 10$ $y = 2x^2 - 6x + 4$

7. Which of the following are quadratic functions? (Circle all that apply)

(a) $f(x) = \frac{1}{x^2} + 6x - 2$ (b) $f(x) = 2x^2 + 1$ (c) f(x) = 5 – 3x

(d) $f(x) = -(x+3)^2 - 8$ (e) $f(x) = -x - 4$ (f) $f(x) = |x-3| + 2$

8. Find the **<u>discriminant</u>** and determine the **<u>number and type</u>** of solutions.

$y = 3x^2 - 18x + 8$ Discriminant: _____

Number and Type of Solutions: _____

Convert to standard form (by multiplying).

9. $y = (x + 4)(x - 3)$	10. $y = 2(3x + 5)(x - 2)$

Convert to intercept form (by factoring).

11. $y = x^2 - 16x + 64$	12. $y = 2x^2 - 3x - 20$

Convert to vertex form (complete the square – refer to page 42 and 43).

13. $y = x^2 + 12x - 3$	14. $y = 2x^2 - 20x + 1$

	QUESTION	ANSWER A	ANSWER B
1	What is the form of the function: $y = 2x^2 + 3x + 2$	Intercept Form	Standard Form
2	What is the form of the function: $y = 2(x + 3)^2 - 10$	Vertex Form	Intercept Form
3	What is the form of the function: $y = -(x + 3)(x - 8)$	Intercept Form	Standard Form
4	What formula will find the x-coordinate of the vertex for **standard form**?	$x = \frac{-b}{2a}$	$x = \left(\frac{b}{2}\right)^2$
5	What formula will find the x-coordinate of the vertex for **intercept form**?	$x = \frac{p-q}{2}$	$x = \frac{p+q}{2}$
6	What is the value of C that would complete the square: $x^2 - 4x + C$	4	16
7	What is the a-value: $y = 2x^2 + 5x + 2$	1	2
8	What type of polynomial is always prime?	A binomial sum of squares	A trinomial
9	What method would you use to solve the equation: $y = (x + 3)(2x + 1)$	Zero Product Property	Complete the Square
10	What method would you use to solve the equation: $y = 4x^2 + 10$	Square Roots Method	Quadratic Formula
11	What method would you use to solve the equation: $y = x^2 + 10x + 3$	Square Roots Method	Complete the Square
12	The discriminant is 24. How many and what type of solutions are there ?	2 Real	1 Real
13	The discriminant is -10. How many and what type of solutions are there ?	2 Imaginary	2 Real
14	The discriminant is 0. How many and what type of solutions are there ?	1 Real	2 Real
15	What calculator function can you use to find the vertex of a parabola?	2^{nd} Graph	2^{nd} Calc
16	How do you find any x-intercept?	Substitute 0 for x	Substitute 0 for y
17	How do you find any y-intercept?	Substitute 0 for x	Substitute 0 for y
18	What is the quadratic formula?	$x = \frac{-b\sqrt{b^2-4ac}}{2a}$	$x = \frac{-b \pm \sqrt{b^2-4ac}}{2a}$

Find the y-intercept of each function:

19. $y = 2x^3 + 5x - 3$

20. $y = 3(x + 5)(2x - 1)$