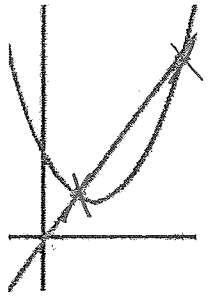
Name: _____ Date: _____

Unit 2:

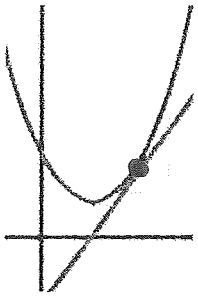
Lesson: Solving Linear-Quadratic Systems Graphically and Algebraically

As you know, systems have TWO or more equations. A Linear-Quadratic System of Equations involves a LINEAR EQUATION and a QUADRATIC EQUATION.

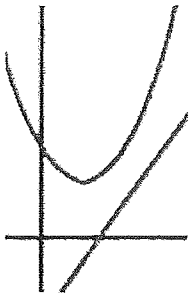
The solution is the point(s) where the line intersects with the parabola. There can be one, two, or no solutions to this type of system.



2 Solutions



1 Solution



No Solution

Example 1: Solving Linear-Quadratic Systems by Graphing.

Solve the following system of equations graphically:

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

$y = x - 2$

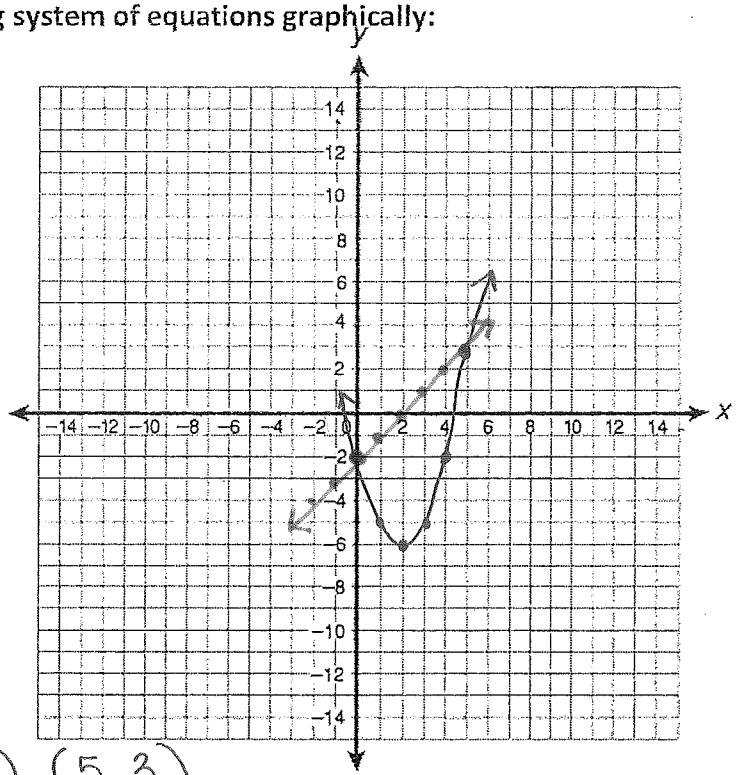
$m = 1 \quad b = -2$

x	y
2	-6
3	-5
1	-5
4	-2
0	-2

$X = \frac{-b}{2a} = \frac{-(-4)}{2(1)} = 2$

$(2)^2 - 4(2) - 2 = -6$

5



Solutions: (0,-2) (5,3)

Check:

Plug into equations

HOW TO SOLVE A LINEAR-QUADRATIC SYSTEM BY GRAPHING

Step 1: Make sure all the equations are either in $y = mx + b$ or $y = ax^2 + bx + c$ form.

Step 2: Graph the parabola, using the line of symmetry ($x = -b/2a$ as a starting point)

Step 3: Graph the line

Step 4: Find the intersection points

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Unit 2:

Lesson: Solving Linear-Quadratic Systems Graphically and Algebraically

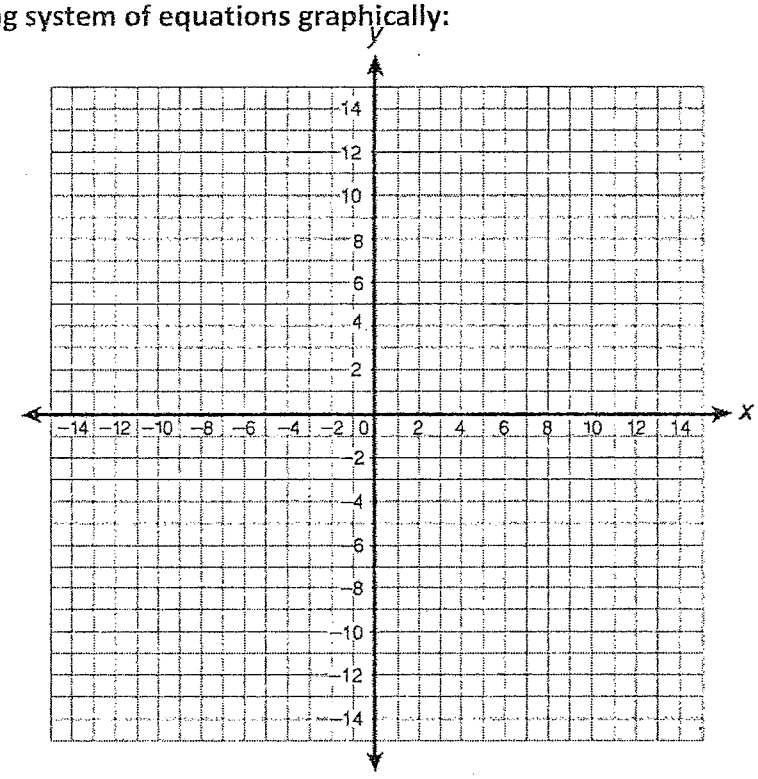
You Try 1!

Solve the following system of equations graphically:

$y = x^2 + 4x + 3$

$y = 2x + 6$

x	y



Solutions: _____

Check:

Regents Exam Questions A.G.9: Quadratic-Linear Systems 1 Name: _____
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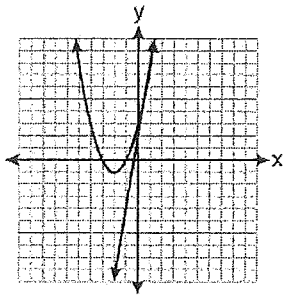
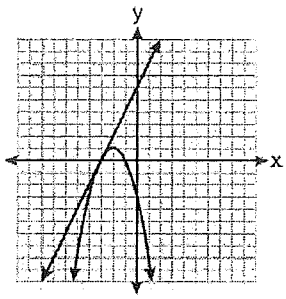
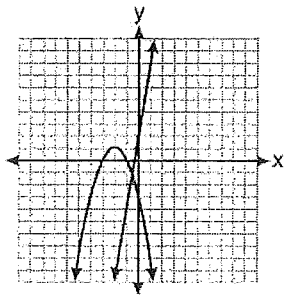
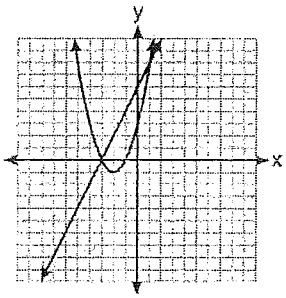
A.G.9: Quadratic-Linear Systems 1:Solve systems of linear and quadratic equations graphically

1 Which graph could be used to find the solution of the system of equations $y = 2x + 6$ and $y = x^2 + 4x + 3$?

1)


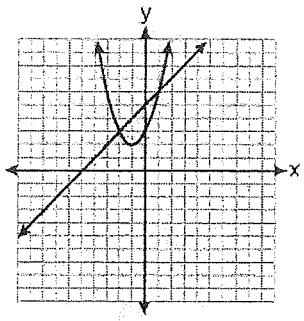
2)


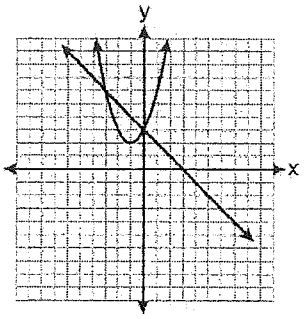
3)


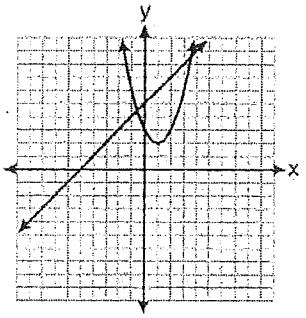
4)


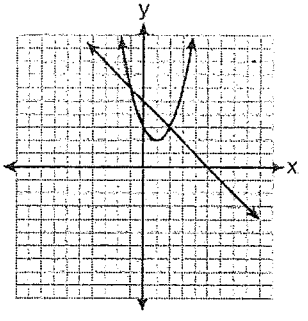
2 Which graph can be used to find the solution of the following system of equations?

$$y = x^2 + 2x + 3$$
$$2y - 2x = 10$$

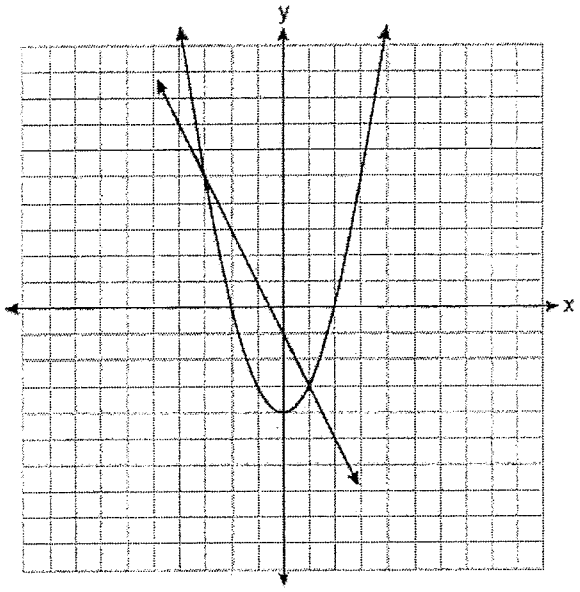
1)


2)


3)


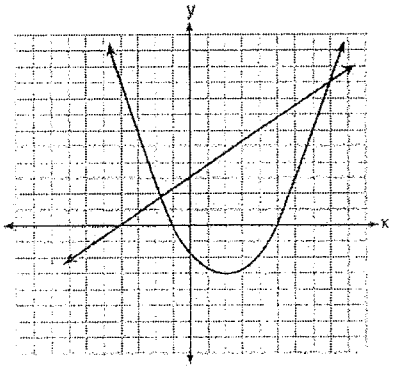
4)


3 Which ordered pair is a solution of the system of equations shown in the graph below?



1) $(-3, 1)$
2) $(-3, 5)$
3) $(0, -1)$
4) $(0, -4)$

4 Two equations were graphed on the set of axes below.



Which point is a solution of the system of equations shown on the graph?

1) $(8, 9)$
2) $(5, 0)$
3) $(0, 3)$
4) $(2, -3)$

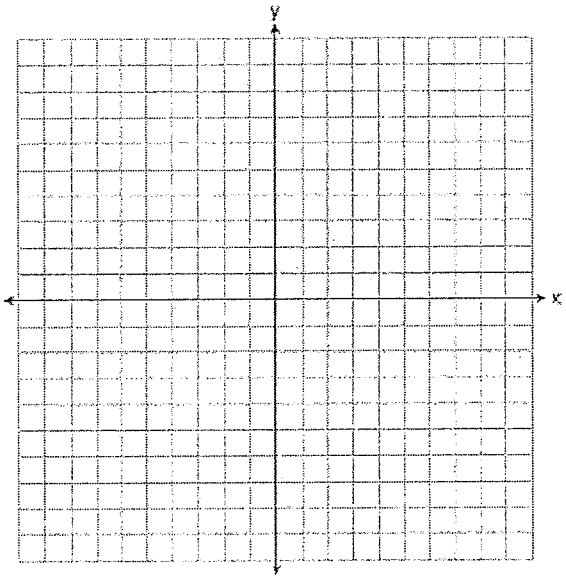
5 How many solutions are there for the following system of equations?

$$y = x^2 - 5x + 3$$
$$y = x - 6$$

1) 1
2) 2
3) 3
4) 0

6 On the set of axes below, solve the following system of equations graphically and state the coordinates of all points in the solution set.

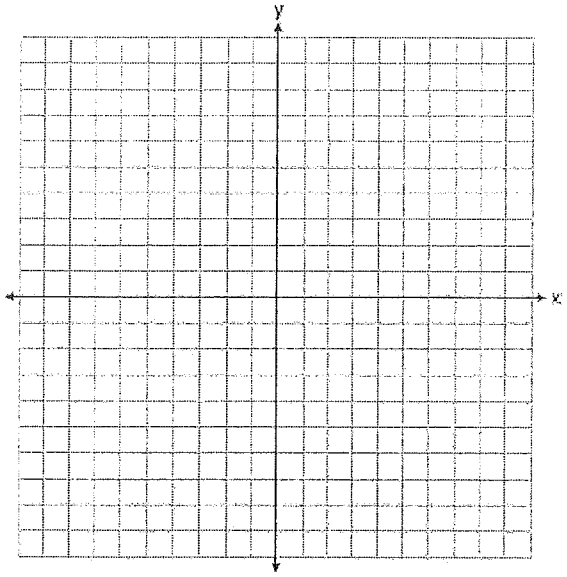
$$y = x^2 + 4x - 5$$
$$y = x - 1$$



7 On the set of axes below, solve the following system of equations graphically for all values of x and y. State the coordinates of all solutions.

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

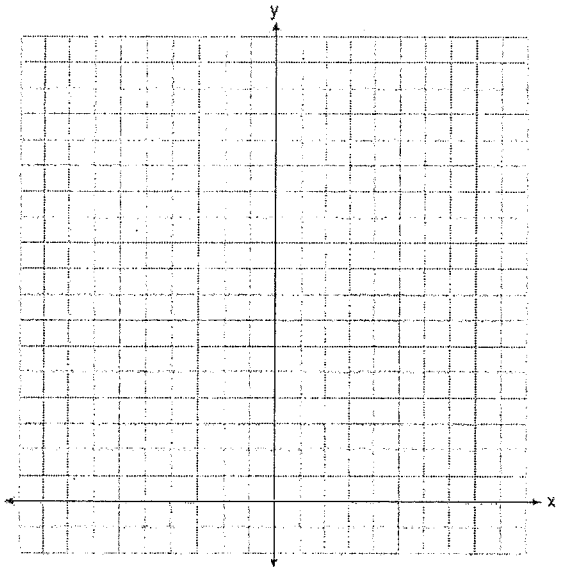
$$y = 2x + 3$$



8 On the set of axes below, solve the following system of equations graphically for all values of x and y.

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

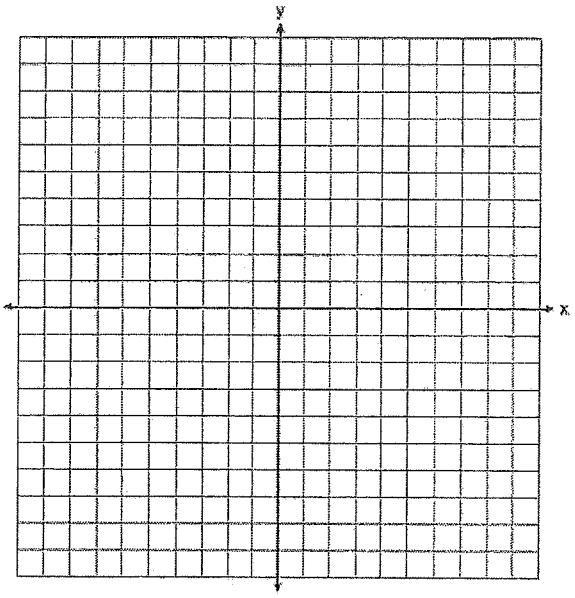
$$y = -2x + 4$$



9 Solve the following systems of equations graphically, on the set of axes below, and state the coordinates of the point(s) in the solution set.

$$y = x^2 - 6x + 5$$

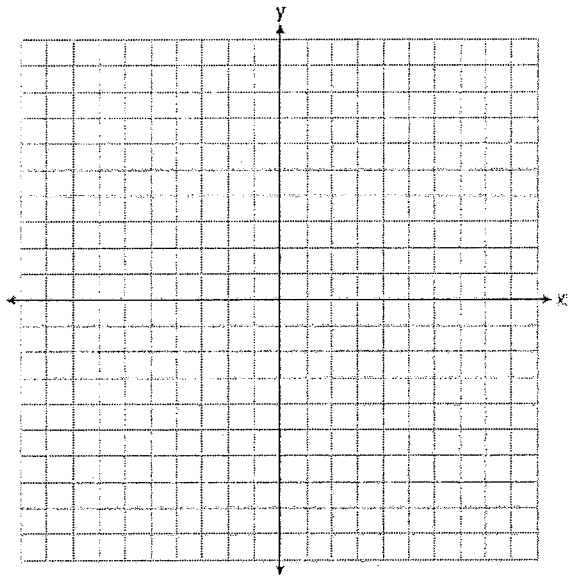
$$2x + y = 5$$



10 On the set of axes below, solve the following system of equations graphically for all values of x and y.

$$y = x^2 - 6x + 1$$

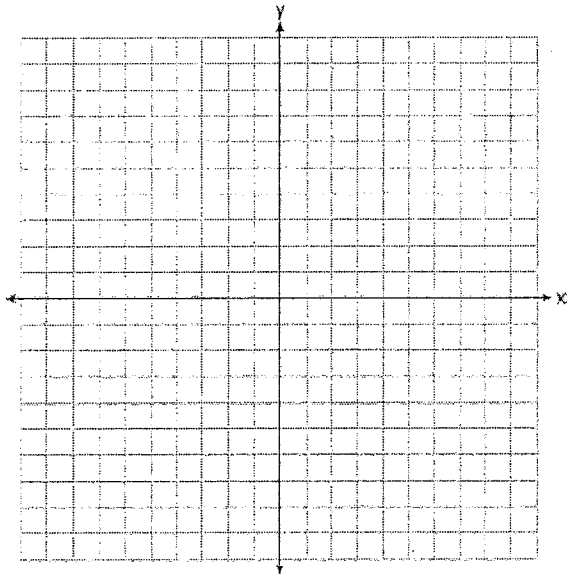
$$y + 2x = 6$$



11 On the set of axes below, solve the following system of equations graphically and state the coordinates of *all* points in the solution set.

$$y = -x^2 + 6x - 3$$

$$x + y = 7$$

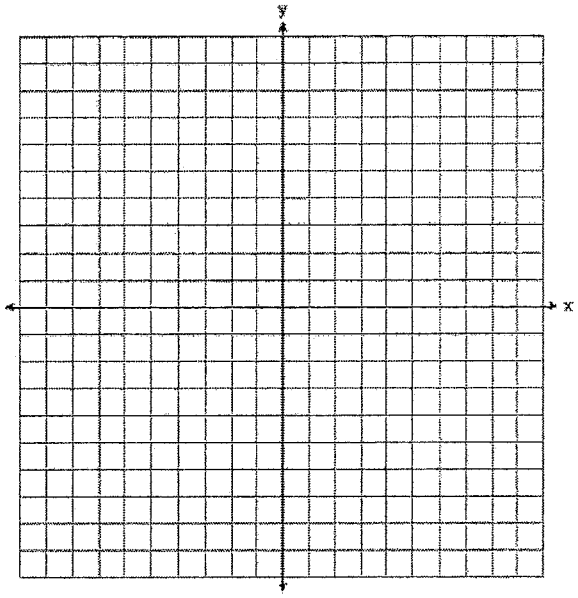


12 On the set of axes below, graph the following system of equations.

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

$$y - x = 4$$

Using the graph, determine and state the coordinates of *all* points in the solution set for the system of equations.

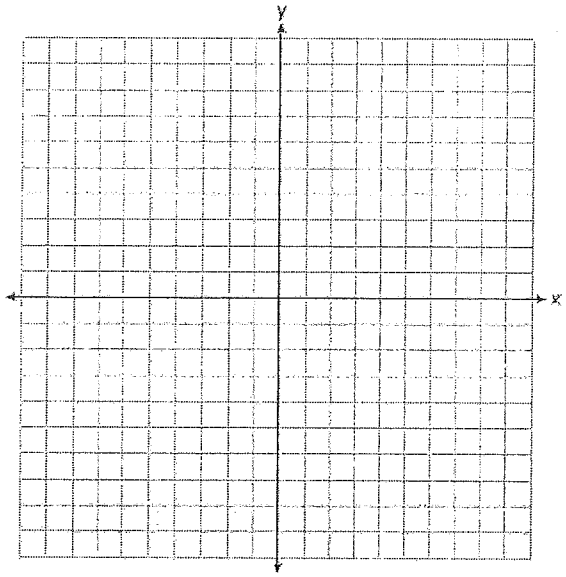


Name: _____

13 On the set of axes below, graph the following system of equations. Using the graph, determine and state *all* solutions of the system of equations.

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

$$y + 1 = -2x$$



Algebra 2 Systems of Linear Equations Review Practice

Name:

Graph each system and then solve by substitution or elimination:

1) $\begin{cases} 2x + 3y = 5 \\ x = 5y + 9 \end{cases}$

2) $\begin{cases} x + 7y = -5 \\ 3x - 2y = 8 \end{cases}$

3) $\begin{cases} x = -2y + 2 \\ 7x - 3y = -20 \end{cases}$

4) $\begin{cases} 3x + 2y = 10 \\ 2x + 5y = 3 \end{cases}$

5) $\begin{cases} y = x - 17 \\ 3x + y = -17 \end{cases}$