

4.6 online hw due today!

4.7 online hw due Monday!


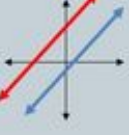

Week #4 Packets due Tuesday!

## Review:

What is a system of equations?

System of equations

- **Define: system of equations**- a set of two or more equations
- **Define: solution of a system**- ordered pair(s) that make all the equations true.
- **Key concept:** the solution to a system is where the graphs intersect.

		
Lines intersect 1 solution	Lines are Parallel No solution	Lines coincide Infinitely many solutions

## **Essential Question**

How can you solve a system of two equations when one is linear and the other is quadratic?

**Solving Systems of Linear & Quadratic Equations Graphically and Algebraically Notes**

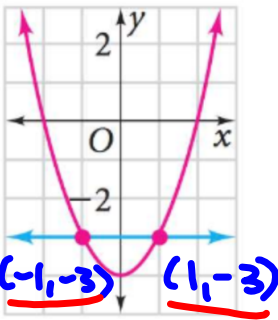
Name: \_\_\_\_\_ Hr \_\_\_\_\_

Systems of linear and quadratic equations can have:

2 solutions,

$$y = x^2 - 4$$

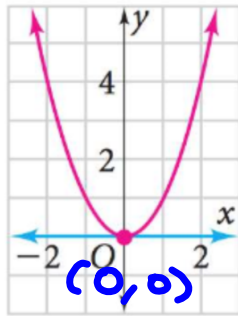
$$y = -3$$



1 solution,

$$y = x^2$$

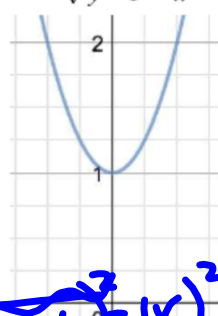
$$y = 0$$



∞ solutions,  
same par.

$$y = x^2 + 1$$

$$\sqrt{y-1} = x$$



Handwritten algebraic work:

$$(y-1) = (x)^2$$

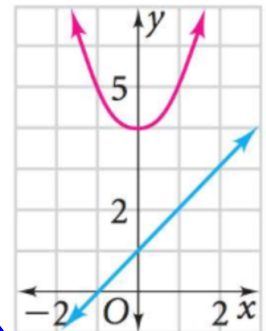
$$y-1 = x^2 + 1$$

$$y = x^2 + 1$$

or no solutions.

$$y = x^2 + 4$$

$$y = x + 1$$



**Solve by Substitution:**

Solve the following system of equations:

$$\begin{aligned} y &= x^2 - 6x + 9 \\ y + x &= 5 \end{aligned}$$

Step 1: Set both equations equal to y:

$$\begin{aligned} y &= x^2 - 6x + 9 \\ y &= 5 - x \end{aligned}$$

Step 2: Write a single equation containing only one variable by substituting the second equation in to first y value (or vice-versa):

$$\begin{aligned} x^2 - 6x + 9 &= 5 - x \\ + x - 5 - 5 &= -5 + x \end{aligned}$$

Step 3: Put in standard form, then factor and solve for x:

$$x^2 - 5x + 4 = 0$$

$$\begin{array}{c} +4 \\ -1 \quad -4 \end{array}$$

$$(x-1)(x-4) = 0$$

$$x=1, \quad x=4$$

$$\begin{array}{l} x-1=0 \\ +1 \quad -1 \end{array} \quad \begin{array}{l} x-4=0 \\ +4 \quad -4 \end{array}$$

Step 4: Find the corresponding y-values. Use either equation.

$$\begin{aligned} y &= x^2 - 6x + 9 \\ y + x &= 5 \end{aligned}$$

$$x=1: \quad y+1=5 \quad y=4 \quad (1,4)$$

$$x=4: \quad y+4=5 \quad y=1 \quad (4,1)$$

Now Try Graphing to find the solutions and compare the results.

Practice - Solve by Substitution:

$$1). \begin{cases} 2x - y = 7 - 2x & \Rightarrow y = 7 - 2x & y = -7 + 2(4) \\ -\frac{1}{2}y = 10 - \frac{3}{2}x & y = -5 + \frac{3}{2}x \end{cases}$$

$$-7 + 2x = -5 + 1.5x$$

$$(4, 1)$$

$$-7 = -5 - 0.5x$$

$$\frac{-2}{-0.5} = \frac{-0.5x}{-0.5}$$

$$4 = x$$

$$2). \begin{cases} -12x + 2y = 12 - 12x \\ -x^2 - 11x + y + 18 = 6 + x^2 + 11x \end{cases} \quad \frac{2y}{2} = \frac{12 - 12x}{2}$$

$$y = 6 - 6x$$

$$y = x^2 + 11x - 12$$

$$6 - 6x = x^2 + 11x - 12$$

$$6 + 6x = x^2 + 11x - 12 + 6x - 6$$

$$0 = x^2 + 17x - 18$$

$$(x-1)(x+18) = 0$$

$$x=1, \quad x=-18$$

$$(1, 0) \quad (-18, 114)$$

$$6 - 6(1)$$

$$6 - 6(-18)$$

$$6 + 108$$

$$-18 \quad = 114$$

$$-1 \quad \wedge \quad 18$$

$$3). \begin{cases} y = x^2 + 4x + 1 \\ y = 2x^2 - 12x + 16 \end{cases}$$

$$\begin{array}{r} x^2 + 4x + 1 = 2x^2 - 12x + 16 \\ -x^2 - 4x - 1 - x^2 - 4x - 1 \end{array}$$

$$\begin{array}{r} (15, 286) \\ (1, 6) \end{array} \quad \begin{array}{r} 15 \\ -1 \\ -15 \end{array}$$

$$\begin{aligned} 0 &= x^2 - 16x + 15 \\ 0 &= (x-1)(x-15) \\ x &= 1 \quad x = 15 \end{aligned}$$



Due Tuesday!

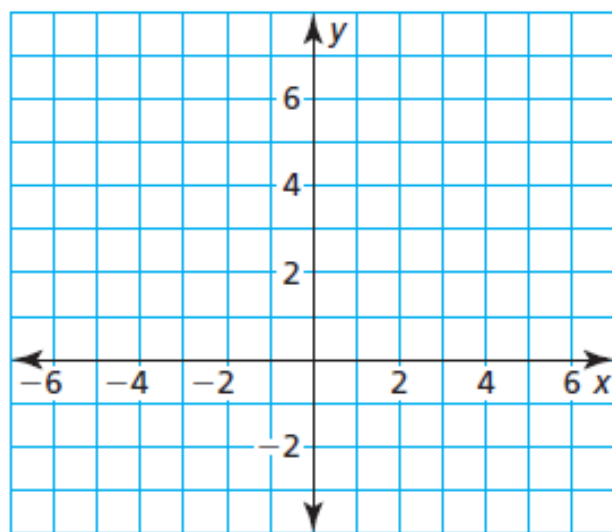
4.8 online hw pg 256-257 #s 1, 3-12, 27, 50,  
52, 56, 57

Solve the system of equations by graphing each equation and finding the points of intersection.

### System of Equations

$$y = x + 2$$

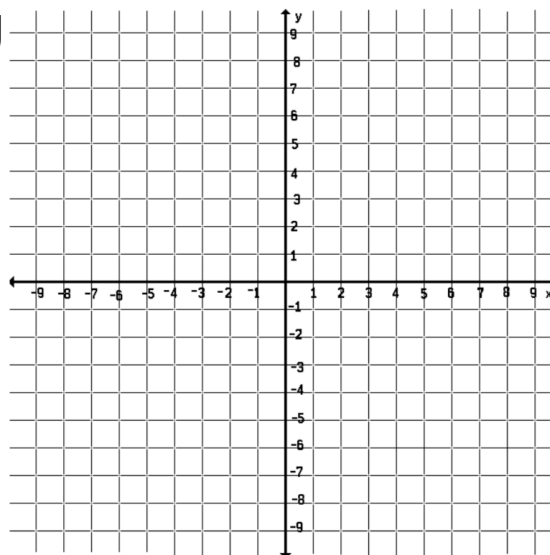
$$y = x^2 + 2x$$



**Solve the system by graphing**

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

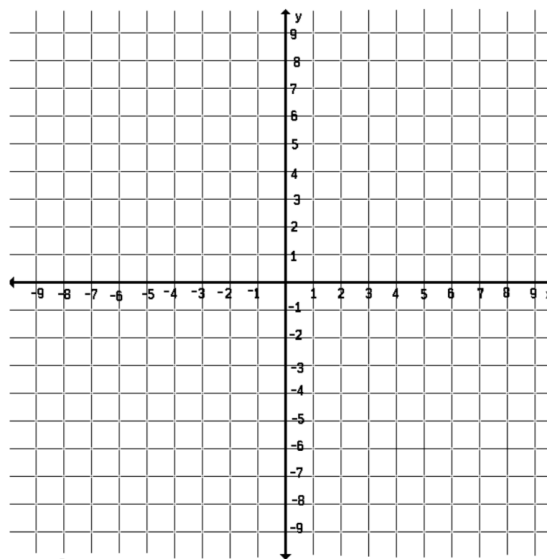
$$y = x - 3$$



**Solve the system by graphing.**

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

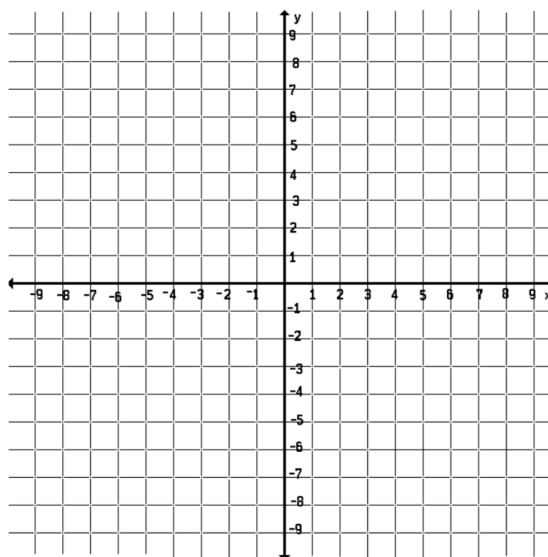
$$y = 2x - 5$$



**Solve the system by graphing.**

$$y = -x + 6$$

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



**Solve the system by graphing**

$$y = 3x - 15$$

$$y = \frac{1}{2}x^2 - 2x - 7$$

