

Algebra 1

Our Goal: To learn to solve a system of nonlinear equations by graphing

Warm Up: missing Genesis work

Today's Homework

9.6 Exercises, p.530: 2-24 (evens)

Previous Homework

9.5 Exercises, p.521: 10-22 (evens)

$$\begin{array}{c}
 a \quad b \quad c \\
 \underline{1}x^2 + \underline{6}x + \underline{1} = 0 \\
 \\
 x = \frac{-6 \pm \sqrt{36 - 4}}{2} \quad x = \frac{-6 \pm \sqrt{32}}{2} \quad \checkmark \\
 \\
 x = \frac{-6 \pm 4\sqrt{2}}{2} \quad \checkmark \\
 \\
 = -3 \pm 2\sqrt{2}
 \end{array}$$

$$ax^2 + bx + c = 0$$

$$x = \frac{-b \pm \sqrt{b^2 - 4ac}}{2a}$$

Solve using any method.

~~$$1. -y = -3x + 6$$

$$y = -3$$~~

$$2. 5x + 4y = -17$$

$$y = 2x - 1$$

$$3. 4x = -7y + 3$$

$$x = y - 2$$

$$4. 6x + 4y = 24$$

$$y = 5x - 7$$

$$5x + 4(2x - 1) = 17$$

$$5x + 8x - 4 = -17$$

$$5x + 8x = -13$$

$$13x = -13$$

$$x = -1$$

$$y = -3$$

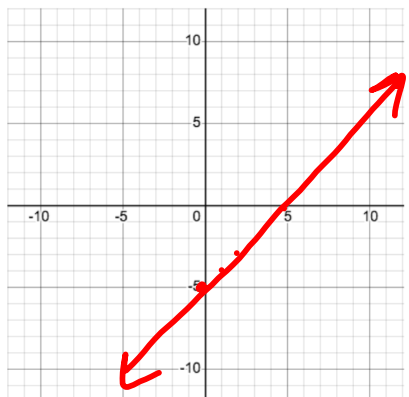
Graph the linear equation. Identify the x-intercept.

1. $y = x - 5$

2. $y = 3x$

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

4. $y - 3x = 1$



Work with a partner. Solve the system of equations by graphing each equation and finding the points of intersection.

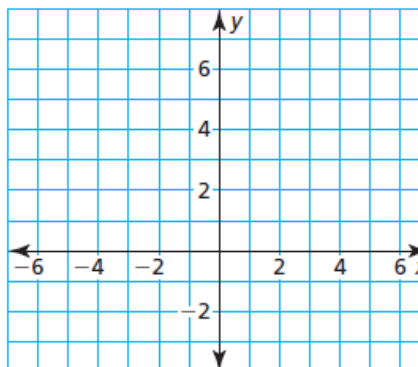
System of Equations

$y = x + 2$

Linear

$y = x^2 + 2x$

Quadratic



Solve the system by graphing.

$$y = 2x^2 + 5x - 1 \quad \text{Equation 1}$$

$$y = x - 3 \quad \text{Equation 2}$$

Solve the system by graphing.

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

$$y = 2x - 5$$

$$2. y = -x + 6$$

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

$$3. y = 3x - 15$$

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

Solve the system by substitution.

$$y = x^2 + x - 1 \quad \text{Equation 1}$$

$$y = -2x + 3 \quad \text{Equation 2}$$

$$x^2 + x - 1 = -2x + 3$$

$$+2x - 3 \quad +2x - 3$$

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

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

$$x = -4, y = 11$$

$$x = 1, y = 1$$

$$(-4, 11) \text{ or } (1, 1)$$

Solve the system by elimination.

$$y = x^2 - 3x - 2 \quad \text{Equation 1}$$

$$y = -3x - 8 \quad \text{Equation 2}$$

Solve the system by substitution.

4. $y = x^2 + 9$
 $y = 9$

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

6. $y = -3x^2 + 2x + 1$
 $y = 5 - 3x$

Solve the system by elimination.

7. $y = x^2 + x$
 $y = x + 5$

8. $y = 9x^2 + 8x - 6$
 $y = 5x - 4$

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

Handwritten work for problem 7:

$$0 = x^2 - 5$$

$$\sqrt{5} = \sqrt{x^2}$$

$$\pm\sqrt{5} = x$$

Solutions circled in red:

$$x = \sqrt{5}, y = \sqrt{5} + 5$$

$$x = -\sqrt{5}, y = -\sqrt{5} + 5$$

Approximate the solution(s) of the system to the nearest thousandth.

$y = \frac{1}{2}x^2 + 3$ Equation 1

$y = 3^x$ Equation 2

Solve $-2(4)^x + 3 = 0.5x^2 - 2x$.

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

$$y = 0.5x^2 - 2x$$

Use the method in Example 4 to approximate the solution(s) of the system to the nearest thousandth.

10. $y = 4x$

11. $y = 4x^2 - 1$

12. $y = x^2 + 3x$

$y = x^2 + x + 3$

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

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

Solve the equation. Round your solution(s) to the nearest hundredth.

13. $3^x - 1 = x^2 - 2x + 5$

14. $4x^2 + x = -2\left(\frac{1}{2}\right)^x + 5$