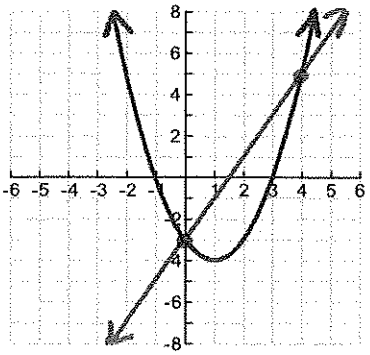
Math 2 Unit 2.8 Solving Systems of Linear and Quadratic Equations Name: _____

Types of Solutions Produced By a Linear and Quadratic System

Example 1: $\begin{cases} y = x^2 - 2x - 3 \\ y = 2x - 3 \end{cases}$

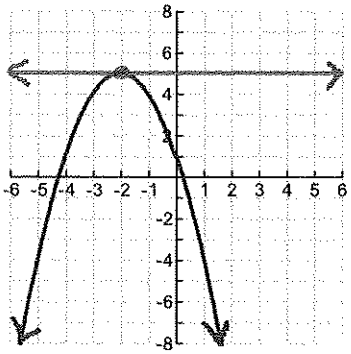


Number of Solution(s): 2

What are the solutions?

(0, −3) & (4, 5)

Example 2: $\begin{cases} y = -(x+2)^2 + 5 \\ y = 5 \end{cases}$

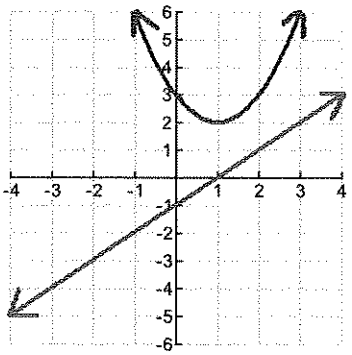


Number of Solution(s): 1

What are the solutions?

(−2, 5)

Example 3: $\begin{cases} y = x^2 - 2x + 4 \\ y = x - 1 \end{cases}$



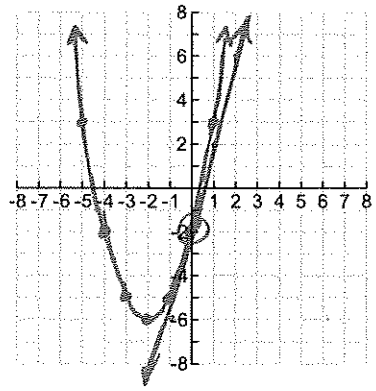
Number of Solution(s): 0

What are the solutions?

NO SOLUTIONS

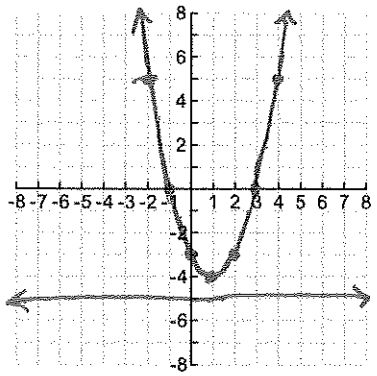
Solving Linear and Quadratic System By Graphing Examples

Example 4a: $\begin{cases} y = (x+2)^2 - 6 \\ y = 4x - 2 \end{cases}$



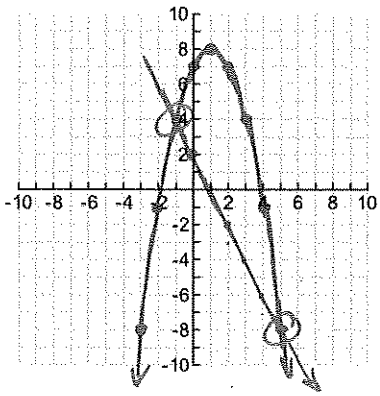
Solution(s): (0, −2)

Example 5a: $\begin{cases} y = x^2 - 2x - 3 \\ y = -5 \end{cases}$



Solution(s): NONE

Example 6a: $\begin{cases} y = -x^2 + 2x + 7 \\ y = -2x + 2 \end{cases}$



Solution(s): (5, −8) & (−1, 4)

Solving Linear and Quadratic System By Substitution (Rework Examples Above) Examples

Example 4b: $\begin{cases} y = (x+2)^2 - 6 \\ y = 4x - 2 \end{cases}$

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

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

$0 = x^2$

$x = 0 \quad y = -2$

Example 5b: $\begin{cases} y = x^2 - 2x - 3 \\ y = -5 \end{cases}$

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

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

$\frac{2 \pm \sqrt{(-2)^2 - 4(1)(+2)}}{2}$

$= \frac{2 \pm \sqrt{-4}}{2} = \frac{2 \pm 2i}{2}$

NO REAL SOLUTIONS

Example 6b: $\begin{cases} y = -x^2 + 2x + 7 \\ y = -2x + 2 \end{cases}$

$-2x + 2 = -x^2 + 2x + 7$

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

$0 = -(x^2 - 4x - 5)$

$0 = -(x - 5)(x + 1)$

$x = 5 \quad x = -1$

$y = -8 \quad y = 4$