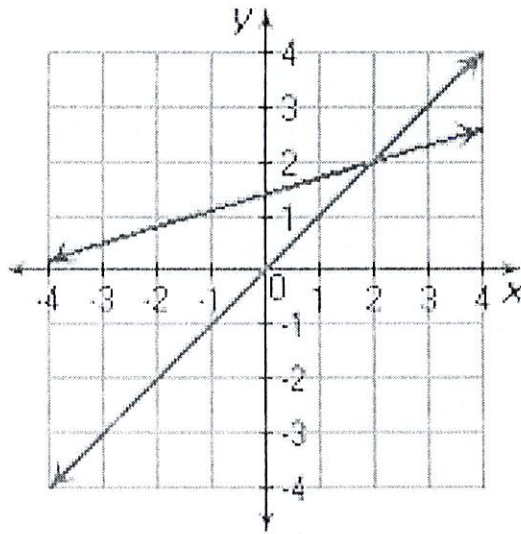


Systems of equations Warm up #1

Write the equations and find the solution.

Solution

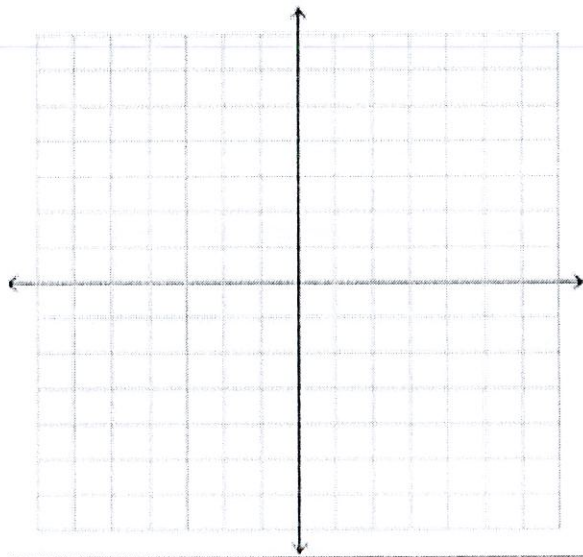


Graph the systems of equations and find the solution.

$$Y = 2x - 1$$

$$Y = x - 1$$

Solution



Name _____

Date _____

Period _____

Lesson 4 Part B: Solving Systems of Equations By Substitution**Guided Notes****Standard and Skills**

A.REI.5 Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions.

SWBAT solve systems of equations by substitution

Steps to Solving Systems of Equations by Substitution

Step 1: _____ one of the two variables. (Either get x by itself or y by itself)

Step 2: _____ the expression from step 1 into the other equation and solve for the other variable.

Step 3: _____ the value from step 2 into the equation from step 1 and solve.

Step 4: _____ your solution.

Step 5: Prove that your solution makes both equations _____.

Additional Notes:

It is best to use the substitution method when a variable is already _____ in one of the equations

Example 1: Solve the system of equations by substitution.

$$y = x - 1$$

$$x + y = 3$$

Example 2: Solve the system of equations by substitution.

$$2x - y = 2$$

$$2x + y = 6$$

Guided Practice

1. $x = -4$
 $3x + 2y = 20$

2. $x = -5y + 4$
 $3x + 15y = -1$

Independent Practice

1. $3x + 2y = -12$
 $y = x - 1$

2. $2x - 5y = 29$
 $x = -4y + 8$

3. $x = \frac{1}{2}y - 3$
 $4x - y = 10$

4. $x = 5y + 10$
 $2x - 10y = 20$

5. $x = -5y + 4$
 $3x + 15y = -1$

6. $2x - 3y = -24$
 $x + 6y = 18$

Think about it

Write a system of equations for the situation and then solve using substitution: Mr. Do ordered a total of 100 pizzas. He order x numbers of cheese pizzas and y number of pepperoni. It cost him a total of \$1255. Cheese pizzas cost \$11.50 each, and pepperoni pizzas cost \$13.00 each.

PROVE YOUR GENIUS! Solve by graphing.

1. $y = -x - 2$
 $y = \frac{2}{3}x + 3$

2. $y = 5$
 $2x + y = 1$

6.2A Solving Systems by Substitution (isolated)

Solve each system by substitution.

Ex)	$\begin{cases} x = -2y \\ 3x + 4y = -8 \end{cases}$	<p style="text-align: center;"><u>Step 1</u></p> <p>The variable x is already by itself.</p>	<p style="text-align: center;"><u>Steps</u></p> <ol style="list-style-type: none"> 1) Solve one of the equations for x or y. <ul style="list-style-type: none"> • This is already done for you for this section. 2) Substitute the expression into the other equation and solve for the variable. 3) Once you solved one for one of the variables, plug this solution into one of the original equations and solve for the other variable. 4) Check your answer by plugging it back into both equations and seeing if it holds true.
	<p style="text-align: center;"><u>Step 2</u></p> $3x + 4y = -8$ $3(-2y) + 4y = -8$ $-6y + 4y = -8$ $\frac{-2y}{-2} = \frac{-8}{-2}$ $y = 4$	<p style="text-align: center;"><u>Step 3</u></p> $x = -2y$ $x = -2(4)$ $x = -8$ <div style="border: 1px solid black; display: inline-block; padding: 2px;">(-8, 4)</div>	<p style="text-align: center;"><u>Step 4</u></p> $x = -2y$ $(-8) = -2(4)$ $-8 = -8 \checkmark$ $3x + 4y = -8$ $3(-8) + 4(4) = -8$ $-24 + 16 = -8 \checkmark$ $-8 = -8 \checkmark$

Solve each system by substitution.

1.
$$\begin{cases} x = 5 \\ x + y = 12 \end{cases}$$

2.
$$\begin{cases} x = -2 \\ x + 3y = 4 \end{cases}$$

3.
$$\begin{cases} y = 5 \\ -3x + 4y = 8 \end{cases}$$

4.
$$\begin{cases} y = 2x \\ x + y = 9 \end{cases}$$

5.
$$\begin{cases} y = -3x \\ x + y = 4 \end{cases}$$

6.
$$\begin{cases} x = 3y \\ x - 3y = 0 \end{cases}$$

7.
$$\begin{cases} x = -2y \\ x - y = 9 \end{cases}$$

8.
$$\begin{cases} y = 2x \\ -6x + 3y = 16 \end{cases}$$

9.
$$\begin{cases} y = -3x \\ 4x - 2y = -20 \end{cases}$$

Solve each system by substitution.

$$10. \begin{cases} y = -3x + 4 \\ y = 4x - 10 \end{cases}$$

$$11. \begin{cases} y = -4x + 2 \\ y = 6x - 8 \end{cases}$$

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

$$13. \begin{cases} y = x - 4 \\ -4x - 6y = -16 \end{cases}$$

$$14. \begin{cases} x = 3y + 1 \\ 2x + 4y = 12 \end{cases}$$

$$15. \begin{cases} x = y - 4 \\ -2x + 3y = 6 \end{cases}$$

16. Next week your math teacher is giving a chapter test. The test will consist of 35 questions. Some problems are worth 2 points and some problems are worth 4 points. There are 20 questions worth 2 points. How many problems of 4 points are on the test?