Math 1

3.2 Solving Systems by Substitution

Unit 3 day 2

SWBAT solve a system of equations by using substitution.

STEPS:

1. Pick one equation and solve for y (or x, but pick one varibale only)
2. Substitute what the "y" is equal to into the second equation.
   ***When you do this, the second equation should only have one variable now!*
3. Simplify the equation, and solve for x.
4. Substitute the value of x into either the first or second equation
   ***When you do this, you should only have one y in the equation!*
5. Solve for y, and write your solution as an ordered pair

Using Substitution

What is the solution of the system? Use substitution. $\begin{aligned} y &= 3x \\ x + y &= -32 \end{aligned}$

What is the solution of the system? Use substitution. $\begin{aligned} y &= 2x + 7 \\ y &= x - 1 \end{aligned}$

Solving for a Variable and Using Substitution

What is the solution of the system? Use substitution. $\begin{aligned} 3y + 4x &= 11 \\ -2x + y &= -3 \end{aligned}$

What is the solution of the system? Use substitution. $\begin{aligned} 6y + 5x &= 10 \\ x + 3y &= -7 \end{aligned}$

Systems with Infinitely Many Solutions or No Solution

How many solutions does each system have? Solve using substitution.

a) $x = -2y + 4$
$3.5x + 7y = 14$

b) $y = 3x - 11$
$y - 3x = -13$

Lesson Check! Solve each system using substitution. Check your solution.

1. $4y = x$
$3x - y = 70$

2. $-2x + 5y = 19$
$3x - 4 = y$

Tell whether the system has one solution, infinitely many solutions, or no solution.

3. $y = 2x + 1$
$4x - 2y = 6$

4. $-x + \frac{1}{2}y = 13$
$x + 15 = \frac{1}{2}y$

Challenge! In a talent show of singing and comedy acts, singing acts are 5 minutes long and comedy acts are 3 minutes long. The show has 12 acts and lasts 50 minutes. How many singing acts and how many comedy acts are in the show?