Algebra 1 6.2

Solve systems of equations using substitution method

Solve problems using substitution of equations

11

solve

solve by graphing

substitution

substitution method

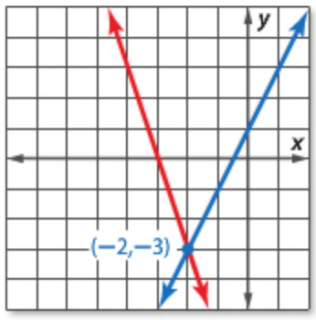
exact ans.

activity: cut & paste

whiteboards

$$\frac{3x}{3} = \frac{15}{3}$$

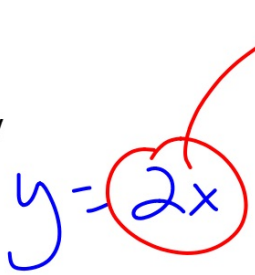
$$x = 5$$



Are there ever any complications when solving by graphing?

recipe: if you run out of one ingredient...
coach: two players are equally skilled...

Cut & paste activity



$y = 2 \cdot 2$

$y = 4$

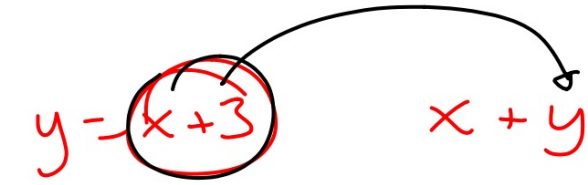
$(2, 4)$

$x + y = 6$

$x + 2x = 6$

$\frac{3x}{3} = \frac{6}{3}$

$x = 2$



$y = x + 3$

$y = 3 + 3$

$x + y = 9$

$x + x + 3 = 9$

$2x + 3 = 9$

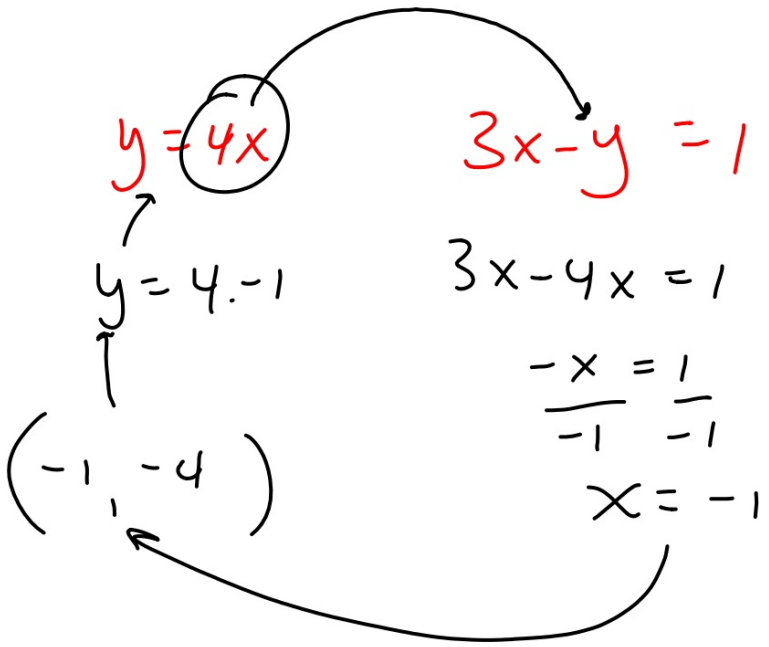
$-3 \quad -3$

$2x = 6$

$\frac{2x}{2} = \frac{6}{2}$

$x = 3$

$(3, 6)$


y = 4x
3x - y = 1
y = 4 . -1
3x - 4x = 1
-x = 1
-1 -1
x = -1
(-1 , -4)

$x + 3y = 7$

$-x \quad -x$

$3y = -x + 7$

$\frac{3y}{3} = \frac{-x}{3} + \frac{7}{3}$

$y = \frac{-1}{3}x + \frac{7}{3}$

$x + 3y = 7$

$-3y \quad -3y$

$x = -3y + 7$

$x = -3 \cdot 2 + 7$

$-6 + 7$

$(1, 2)$

$2x - 4y = -6$

$2(-3y + 7) - 4y = -6$

$-6y + 14 - 4y = -6$

$-10y + 14 = -6$

$-14 \quad -14$

$-10y = -20$

$\frac{-10y}{-10} = \frac{-20}{-10}$

Example 1 Solve a System by Substitution

Use substitution to solve the system of equations.

$y = 2x + 1$
$3x + y = -9$

Step 1 The first equation is already solved for y.

$y = 2 \cdot -2 + 1$
$-4 + 1$

$3x + 2x + 1 = -9$
$5x + 1 = -9$
$-1 \quad -1$
$\frac{5x}{5} = \frac{-10}{5}$
$x = -2$

You are the coach... Who is on the sub list?

$(-2, -3)$

KeyConcept Solving by Substitution

Step 1 When necessary, solve at least one equation for one variable.

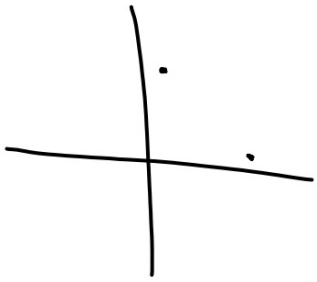
Step 2 Substitute the resulting expression from Step 1 into the other equation to replace the variable. Then solve the equation.

Step 3 Substitute the value from Step 2 into either equation, and solve for the other variable. Write the solution as an ordered pair.

(x, y)

$(1, 5)$

$(5, 1)$



GuidedPractice

1A. $y = 4x - 6$
$5x + 3y = -1$

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8-22 all

1B. $2x + 5y = -1$
$y = 3x + 10$

How is this problem different?

Example 2 Solve and then Substitute

Use substitution to solve the system of equations.

$$x + 2y = 6$$
$$3x - 4y = 28$$

GuidedPractice

2A. $4x + 5y = 11$
$y - 3x = -13$

2B. $x - 3y = -9$
$5x - 2y = 7$