7.3 Solve Linear Systems by Adding or Subtracting

Goal • Solve linear systems using elimination.

Your Notes

SOLVING A LINEAR SYSTEM USING THE ELIMINATION METHOD

Step 1 _____ the equations to _____ one variable.

Step 2 _____ the resulting equation for the other variable.

Step 3 **Substitute** in either original equation to _____ _____.

Example 1 *Use addition to eliminate a variable*

Solve the linear system: $x + 5y = 9$ **Equation 1**

$4x - 5y = -14$ **Equation 2**

Solution

1. _____ the equations to eliminate one variable.

$x + 5y = 9$

$4x - 5y = -14$

_____ = _____

2. Solve for x. $x =$ _____

3. Substitute _____ for x in either equation and _____.

$x + 5y = 9$ **Write Equation 1.**

_____ $+ 5y = 9$ **Substitute** _____ **for x.**

$y =$ ___ **Solve for y.**

The solution is (_____, ___).

Make sure to check your solution by substituting it into each of the original equations.

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Your Notes

Example 2 ***Use subtraction to eliminate a variable***

Solve the linear system: $3x - 4y = 2$ **Equation 1**

$3x + 2y = 26$ **Equation 2**

Solution

1. _____ the equations to eliminate one variable.

$3x - 4y = 2$

$3x + 2y = 26$

_____ = _____

2. Solve for y. $y =$ ___

3. Substitute ___ for y in either equation and _____.

$3x + 2y = 26$ **Write Equation 2.**

$3x + 2(\_\_\_) = 26$ **Substitute ___ for y.**

$x =$ ___ **Solve for x.**

The solution is (___, ___).

✔ ***Checkpoint*** **Solve the linear system.**

1. $-8x + 3y = 12$ $8x - 9y = 12$	**2.** $x + 6y = 13$ $-2x + 6y = -8$

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Your Notes

Example 3 ***Arrange like terms***

Solve the linear system: $6x + 7y = 16$ **Equation 1**

$y = 6x - 32$ **Equation 2**

Solution

1. _____ Equation 2 so that the like terms are arranged in columns.

$6x + 7y = 16$

$y = 6x - 32$

$6x + 7y = 16$

_____

2. _____ the equations. _____ = _____

3. Solve for y. $y =$ _____

4. Substitute _____ for y in either equation and _____.

$6x + 7y = 16$ **Write Equation 1.**

$6x + 7($_____$) = 16$ **Substitute** _____ **for** y.

$x =$ ___ _____.

The solution is (___, _____).

✔ ***Checkpoint*** **Solve the linear system.**

3. $4x - 5y = 5$ $5y = x + 10$	**4.** $7y = 4 - 2x$ $2x + y = -8$

Homework

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