

Section 7.4 Using Substitution to Solve a System of Equations

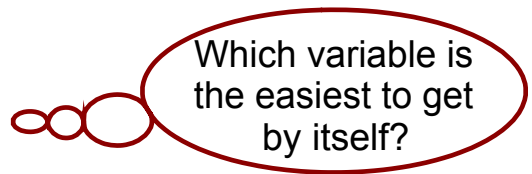
#3. Solving a Linear System using Substitution

Example 1 Solve using substitution.

$$3x + 4y = -4$$

$$x + 2y = 2$$

Step 1: Rewrite one of the equations as $x = ?$ or as $y = ?$



Step 2: Substitute the $x = ?$ or $y = ?$ into the other equation.

By doing this we have transformed our system of two equations with two variables, down to one equation with only one variable.

Step 3: Solve for the variable.

Step 4: Remember to go back and find the ordered pair (x, y) .

Example 2 Solve using substitution.

a) $2x + y = 5$

$$x + y = 3$$

b) $5x - 3y = 18$

$$4x - 6y = 18$$

Writing and Solving a Linear System from a Word Problem

Example 3

a) Create a linear system to model this situation:

“The perimeter of a rectangle is 16ft. Its length is 2 ft longer its width.”

b) Using a method of your choice, solve the linear system to determine the dimensions of the rectangle.

Example 4

a) Create a linear system to model this situation:

“In Calgary a school raised \$195 by collecting 3000 items for recycling. The school received 5 cents for each pop can and 20 cents for each large plastic bottle. ”

b) Using a method of your choice, solve the linear system to determine the number of pop cans and the number of plastic bottles were recycled.

Example 5

a) Create a linear system to model this situation:

“A bicycle has two wheels and a tricycle has three wheels. There are a total of 40 bicycles and tricycles on display in a store with a total of 100 wheels.”

b) Using a method of your choice, solve the linear system to determine the number of bicycles and tricycles on display.

Work Book Questions

p.401 #8ab

p.425 #4ac, 5ac

p.410 #12, 13

p.438 #16, 17

Extra Practice Questions

p.410 #11 p.425 #4bd, 5bd

p.438 #19b

Attachments

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