Module 5 Day 9: Solving Systems of Equations by Substitution

Try this…

Find y if x=2 given y=3x+2.

What did you do to solve for y?

Examples:

1. $y=x+8$
   $Y=4x-1$

2. $y=-3x+5$
   $2x+y=6$

3. $4x+3y=37$
   $y=x-4$

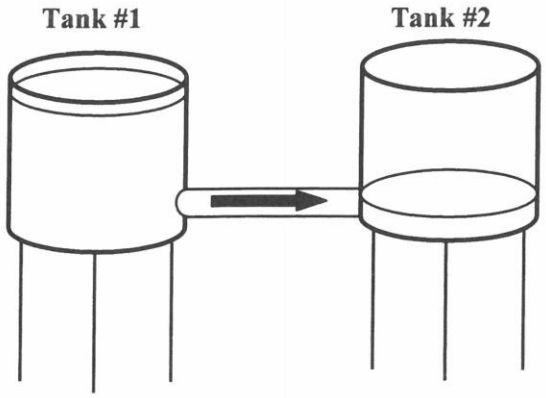
You Try!

a. $Y=6x-11$
   $-2x-3y=-7$

b. $5x-4y=-3$
   $y=-3x+5$

APPLICATIONS

4. Water is flowing from Tank #1 to Tank #2 as shown in the picture. Originally, Tank #1 had 1,540 gallons in it and Tank #2 had 236 gallons in it. Water is draining out of Tank #1 at a rate of 6 gallons per minute and, thus, filling Tank #2 up at a rate of 6 gallons per minute.



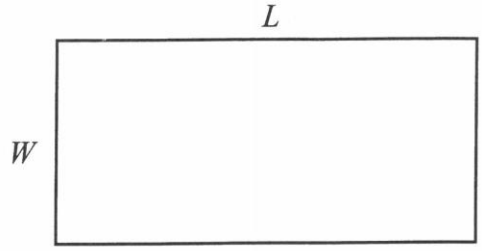
(a) Write an equation for each tank that models the volume of water, v in gallons, as a function of the number of minutes, m, that the water has been flowing.

Tank #1: _____ Tank #2: _____

(b) Find out how long it takes, to the nearest minute, for the two tanks to have the same number of gallons. Will it take longer or shorter than 2 hours? Justify.

5. A rectangle has a perimeter of 42 feet. Its length, L, is three feet more than twice its width, W.

(a) Create an equation in terms of L and W for the perimeter of the rectangle.



(b) Create an equation that relates L and W based on the length being three feet more than twice the width.

(c) Solve the system of equations that you just created by substitution to find the values of the length and width.