

Algebra 1 CC
Assignment #46
Solving Systems by Substitution

1. Solve each of the following system of equations by substitution.

(a) $y = x + 8$

(b) $y = -3x + 5$

(c) $4x + 3y = 37$

$y = 4x - 1$

$2x + y = 6$

$y = x - 4$

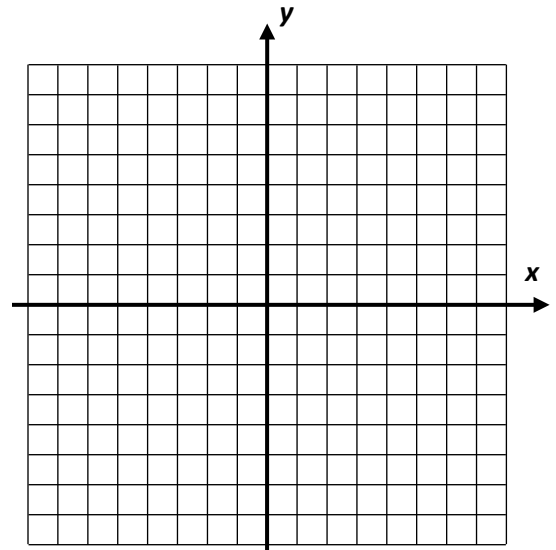
2. Given the system shown below do the following:

$$y = \frac{1}{2}x - 2$$

$$y = -3x + 5$$

(a) Solve this system graphically using the grid shown.

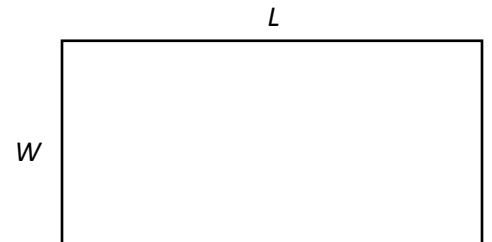
(b) Solve this system by substitution. Show your work.



3. 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.

R1. Simplify: $3x(x - 5) - 2(x^2 + 7)$

R2. Use a calculator to evaluate the expression and round the result to the *nearest hundredth*. 29.83×13.7

R3. Translate the following sentence into an algebraic expression: The quantity of 9 more than x divided by the quantity of 12 less than y

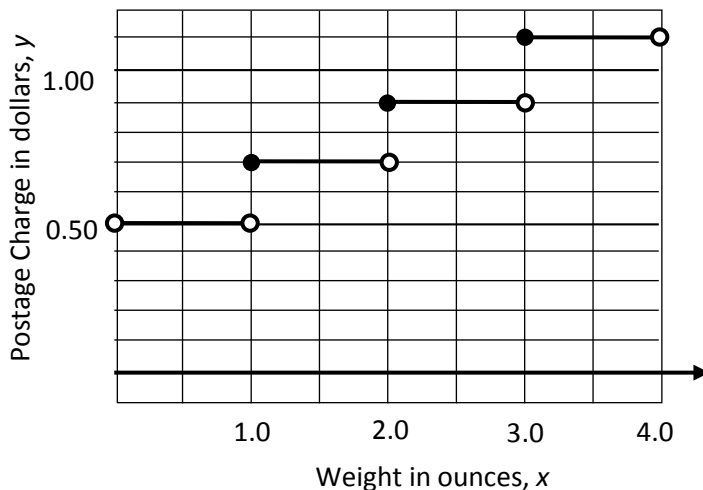
R4. Postage rates on envelopes are a great example of **step functions**. There is a fixed price for a certain range of weights and then another fixed price for another range of weights, etcetera. Below is the graph of one such price structure.

(a) According to this graph, what would be the postage rate on a letter weighing 1.5 ounces?

(b) What would be the postage rate on a letter weighing exactly 3.0 ounces?

(c) Write a piecewise defined function for the postage rates:

$$y = \left\{ \begin{array}{l} \\ \\ \\ \end{array} \right.$$



(d) Why would it be incorrect to state that the range of this function is $0.50 \leq y \leq 1.15$?

1. (a) (3, 11)
 (b) (-1, 8)
 (c) (7, 3)

2. (2, -1)

3. (a) $2L + 2w = 42$
 (b) $L = 2w + 3$
 (c) $w = 6$ and $L = 15$

R1. $x^2 - 15x - 14$

R2. 408.67

R3. $\frac{x+9}{y-12}$

- R4.** (a) \$0.70
 (b) \$1.10
 (c)

$$y = \left\{ \begin{array}{ll} 0.50 & 0 < x < 1 \\ 0.70 & 1 \leq x < 2 \\ 0.90 & 2 \leq x < 3 \\ 1.10 & 3 \leq x < 4 \end{array} \right.$$

(d) Because the function is not continuous