

Name: _____ Period: _____ Date: _____

SOLVING LINEAR SYSTEMS USING SUBSTITUTION Exit Quiz

Find the solution of the following systems by substitution and determine if it is an independent, inconsistent or dependent system

1.
$$\begin{cases} 2x + y = 3 \\ 4x + 3y = 10 \end{cases}$$

4.
$$\begin{cases} 5x - y = 4 \\ x = 3 - y \end{cases}$$

2.
$$\begin{cases} x = y - 1 \\ 5x + 3y = -8 \end{cases}$$

5.
$$\begin{cases} x - y = 10 \\ x + 6y = 1 \end{cases}$$

3.
$$\begin{cases} 6x + 2y = 7 \\ y = 1 - 3x \end{cases}$$

6.
$$\begin{cases} y = 1 + 2x \\ 3x - y = 4 \end{cases}$$

SOLVING LINEAR SYSTEMS USING SUBSTITUTION Exit Quiz**ANSWERS**

Find the solution of the following systems by substitution and determine if it is an independent, inconsistent or dependent system

1.

I. $2x + y = 3$ and **II.** $4x + 3y = 10$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “y” from equation I and then substitute it in equation II to find the value of the other variable, like follows:

$$y = 3 - 2x$$

Substituting in II:

$$4x + 3(3 - 2x) = 10$$

Applying distributive property: $4x + 9 - 6x = 10 \rightarrow 2x = -1 \rightarrow x = -\frac{1}{2}$

Now, we calculate the value of variable “y” by substituting the result of x into the equation $y = 3 - 2x$

$$y = 3 - 2\left(-\frac{1}{2}\right) = 3 + 1 = 4$$

Solution (-1/2, 4). Independent System**2.**

I. $x = y - 1$ and **II.** $5x + 3y = -8$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “x” from equation I and then substitute it in equation II to find the value of the other variable, like follows:

$$x = y - 1$$

Substituting in II:

$$5(y - 1) + 3y = -8$$

Applying distributive property: $5y - 5 + 3y = -8 \rightarrow 8y = -3 \rightarrow y = -\frac{3}{8}$

Now, we calculate the value of variable “x” by substituting the result of “y” into the equation $x = y - 1$

SOLVING LINEAR SYSTEMS USING SUBSTITUTION Exit Quiz

$$x = -\frac{3}{8} - 1 = -\frac{11}{8}$$

Solution (-11/8, -3/8). Independent System**3.**

I. $6x + 2y = 7$ and **II.** $y = 1 - 3x$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “y” from equation I and then substitute it in equation II to find the value of the other variable, like follows:

$$y = 1 - 3x$$

Substituting in I:

$$6x + 2(1 - 3x) = 7$$

Applying distributive property: $6x + 2 - 6x = 7 \rightarrow 0 = 5$

No solution. Inconsistent System**4.**

I. $5x - y = 4$ and **II.** $x = 3 - y$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “x” from equation II and then substitute it in equation I to find the value of the other variable, like follows:

$$x = 3 - y$$

Substituting in I:

$$5(3 - y) - y = 4$$

Applying distributive property: $15 - 5y - y = 4 \rightarrow 6y = 11 \rightarrow y = \frac{11}{6}$

Now, we calculate the value of variable “x” by substituting the result of “y” into the equation $x = 3 - y$

$$x = 3 - \frac{11}{6} = \frac{7}{6}$$

SOLVING LINEAR SYSTEMS USING SUBSTITUTION Exit Quiz**Solution (7/6, 11/6). Independent System**

5.

$$\text{I. } x - y = 10 \quad \text{and} \quad \text{II. } x + 6y = 1$$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “x” from equation I and then substitute it in equation II to find the value of the other variable, like follows:

$$x = 10 + y$$

Substituting in II:

$$\begin{aligned} 10 + y + 6y &= 1 \\ 7y &= -9 \rightarrow y = -\frac{9}{7} \end{aligned}$$

Now, we calculate the value of variable “x” by substituting the result of “y” into the equation $x = 10 + y$

$$x = 10 - \frac{9}{7} = \frac{61}{7}$$

Solution (61/7, -9/7). Independent System

6.

$$\text{I. } y = 1 + 2x \quad \text{and} \quad \text{II. } 3x - y = 4$$

We choose the equation which contains the easiest variable to solve. In this case we select to solve variable “y” from equation I and then substitute it in equation II to find the value of the other variable, like follows:

$$y = 1 + 2x$$

Substituting in II:

$$3x - (1 + 2x) = 4$$

$$\text{Applying distributive property: } 3x - 1 - 2x = 4 \rightarrow x = 5$$

Now, we calculate the value of variable “y” by substituting the result of “x” into the equation $y = 1 + 2x$

$$y = 1 + 2(5) = 11$$

Solution (5, 11). Independent System

Name: _____ Period: _____ Date: _____

SOLVING LINEAR SYSTEMS USING SUBSTITUTION Exit Quiz