

Is this a solution to the system? (yes or no?)

SHOW WORK

$$3y = -5x + 15$$

$$-y = -3x + 9$$

a) (0, 0)

No
 $0 \neq 9$

b) (3, 0)

yes
 $0 = 0 \checkmark$
 $0 = -3(3) + 9$
 $0 = 0 \checkmark$

c) (1, 1)

NO
 $3 \neq 10$

Homework Questions?

11) $3x - y = 7 \rightarrow 3x - (x+3) = 7$
 $y = (x+3)$ $3x - x - 3 = 7$
 $2x - 3 = 7$
 $+3 + 3$
 $2x = 10$

10) $4x - 7y = 9 \rightarrow 4x - 7(x-3) = 9$
 $y = x - 3$ $4x - 7x + 21 = 9$
 $-3x + 21 = 9$
 $-21 - 21$
 $-3x = -12$
 $-3 -3$
 $x = 4$

15) $-2x + y = 11$
 $x = -15 - 9y$
 $-2(-15 - 9y) + y = 11$
 $30 + 18y + y = 11$
 $-30 -30$
 $19y = -19$
 $19 19$
 $y = -1$

Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

7.2 Solving Linear Systems by Substitution

Goals: • Solve a linear system by substitution.

EQ: Which variable would be the easiest to solve for?

$$7x + y = -3$$

$$4x - 2y = 10$$

Your Name _____
DATE _____ Mo/Date/Year

④ BIGGER PICTURE Algebra 1.5

② LAST UNIT/Experience **Inequalities** ① CURRENT UNIT **Systems** ③ NEXT UNIT/Experience **Exponents**

⑧ Student Activities or Assignments ⑤ UNIT MAP

7.1
7.2
7.3
7.4
7.5
7.6

1. Using addition
2. Using multiplication first
3. Arranging like terms first

⑦ UNIT SELF-TEST QUESTIONS

- How do you solve a system by graphing?
- How is the substitution method used to solve a system?
- How do you use linear combinations to solve a system?
- How can you represent and solve a real world situation with a system of equations?
- How do you determine the number of solutions a system has?
- How do you graph a system of linear inequalities and determine the solution area?

⑨ UNIT RELATIONSHIPS

Solve
Graph
Represent
Apply

Example 1: Choosing an Equation to Solve

Tell which equation you would use to isolate a variable. Explain your reasoning.

a) $6x + y = -5 \rightarrow 6x + y = -5$
 $2x - 3y = 10 \quad -6x \quad -6x$
 $y = -6x - 5$

b) $5c - 2d = 1$
 $c + 3d = 0$
 $-3d \quad -3d$
 $c = -3d$

Try It Tell which equation you would use to isolate a variable. Explain your reasoning.

$$1) \begin{cases} x - 2y = 0 \\ x - 8y = -5 \end{cases} \rightarrow \begin{cases} x - 2y = 0 \\ +2y \quad +2y \end{cases}$$

• $x = 2y$

$$2) \begin{cases} 4x + 2y = 10 \\ 7x - y = 12 \end{cases}$$

$$\begin{matrix} -7x & -7x \\ -y & -7x + 12 \\ \hline -1 & -1 & -1 \end{matrix}$$

• $y = 7x - 12$

Example 2: The Substitution Method

Solve the linear system.

$$2x - 5y = -13$$

$$x + 3y = -1$$

$$\begin{matrix} -3y & -3y \end{matrix}$$

• $x = (-3y - 1)$

$$x = -3(1) - 1$$

$$x = -4$$

$$\begin{pmatrix} -4 & 1 \\ x & y \end{pmatrix}$$

$$\begin{matrix} 2(-3y - 1) - 5y = -13 \\ -6y - 2 - 5y = -13 \end{matrix}$$

$$\begin{matrix} -11y - 2 = -13 \\ +2 & +2 \end{matrix}$$

$$\begin{matrix} -11y = -11 \\ \hline -11 & -11 \end{matrix}$$

$$y = 1$$

$$\begin{matrix} 2(-4) - 5(1) = -13 \\ -8 - 5 = -13 \\ -13 = -13 \checkmark \end{matrix}$$

∴ Yes, $(-4, 1)$ is solution

Try It Use the substitution method to solve the linear system.

3) $y = x - 1$
 $x - 5y = -15$

$x - 5(x - 1) = -15$
 $x - 5x + 5 = -15$
 $-4x + 5 = -15$
 $\quad -5 \quad -5$
 $\frac{-4x}{-4} = \frac{-20}{-4}$
 $x = 5$

$y = 5 - 1$
 $y = 4$
 $(5, 4)$

$5 - 5(4) = -15$
 $-15 = -15 \checkmark$
 $\therefore \text{yes, } (5, 4) \text{ is soln}$

4) $y = -5x + 3$
 $3x + 2y = -8$

SUMMARY

EQ: Which variable would be the easiest to solve for?

$$\begin{array}{l} 7x + y = -3 \rightarrow 7x + y = -3 \\ \quad -7x \quad -7x \\ 4x - 2y = 10 \end{array}$$

$$y = -7x - 3$$

7.2 Homework

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