

Warm-Up

Solve for the indicated variable.

1) $2y + 7x = 4y + 3$ for y

$$\begin{array}{r} 2y + 7x = 4y + 3 \\ -2y \quad -2y \\ \hline 7x = 2y + 3 \end{array}$$

2) $m = \frac{x-y}{3}$ for x

$$\begin{array}{r} m = \frac{x-y}{3} \\ 3m = x-y \\ 3m + y = x \end{array}$$

Sep 6-12:49 PM

Homework questions?

Aug 28-7:29 AM

Today:Solving systems of Linear Equations

$$\begin{array}{l} x + 7y = 0 \\ 2x - 8y = 22 \end{array}$$

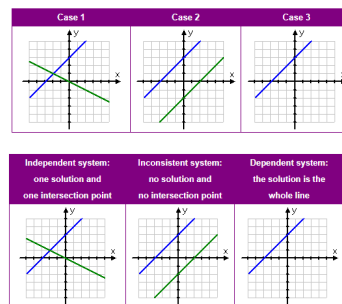
$$\begin{array}{l} 3x - 5y = 17 \\ y = -7 \end{array}$$

$$\begin{array}{l} y = 4x - 9 \\ y = x - 3 \end{array}$$

What were the methods that you used??

Aug 20-5:02 PM

If you solved by graphing, any of the following could occur. What did each indicate about the number of solutions?



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Today, we're primarily going to focus on 2 ways of solving linear systems:

- By graphing in the calculator
- By substitution

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Solving Systems of EquationsBy Substitution

Step 1	Solve for one variable in one equation
Step 2	Substitute # 1 into other equation
Step 3	Solve that equation
Step 4	Substitute that number into one of the original equations and solve
Step 5	Write as an ordered pair, (x,y) and check.

Sep 6-10:16 AM

Solving by Graphing in Calculator

$y = mx + b$

Ex 1) $6x + 8y = -22$

$y = -5$

$6x + 8y = -22$

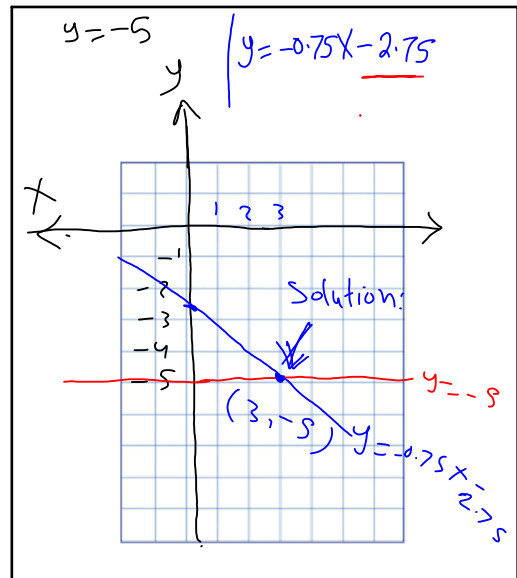
$-6x$ $-6x$

$8y = -6x - 22$

$y = -\frac{6}{8}x - \frac{22}{8}$

$y = -0.75x - 2.75$

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Jan 27-10:09 AM

① $y = -5$

② $y = -0.75x - 2.75$

Substitute y from eq. ① into eq. # ②

$-5 = -0.75x - 2.75$

$+2.75$ $+2.75$

$-2.25 = -0.75x$

-0.75 -0.75

$3 = x$

$(3, -5)$

Jan 27-10:15 AM

Ex 2) $7x + 2y = -19$

$-x + 2y = 21$

$-(-x + 2y) = -21$

$7x + 2y = -19$

$-x + 2y = 21$

$8x = -40$

$x = -5$

Substitute the value of x from eq. # 4 into eq. # 3

$y = 10.5 + 0.5(-5)$

$y = 10.5 - 2.5$

$y = 8$

Solution: $(-5, 8)$

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Ex 3) $3x - y = 4$

$-4x + 2y = 2$

$3x - y = 4$

$-4x + 2y = 2$

Substitute y value from eq. # 3 into eq. # 2

$3x - 4 = y$

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

$-4x + 6x - 8 = 2$

$2x - 8 = 2$

$2x = 10$

$x = 5$

Substitute the value of x from eq. # 4 into eq. # 3

$3(5) - 4 = y$

$11 = y$

The solution of the system is $(5, 11)$

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Solve by using Substitution Method:

Ex 1) $\begin{cases} y = 3x \\ x + 21 = -2y \end{cases}$

$x + 21 = -2(3x)$

$x + 21 = -6x$

$7x = -21$

$x = -3$

Substitute x value from eq. # 3 into eq. # 1

$y = 3x$

$y = 3(-3)$

$y = -9$

Solution $(-3, -9)$

Sep 6-10:23 AM

Ex 2) $\begin{cases} 4x - 6y = 12 \\ x - 7y = 14 \end{cases}$

$4x = 12 + 6y$

$4x - 12 = 6y$

$\frac{4x - 12}{4} = \frac{6y}{4}$

$x - 3 = \frac{3}{2}y$

$x = \frac{3}{2}y + 3$

$x - 7(\frac{3}{2}y + 3) = 14$

$x - \frac{21}{2}y - 21 = 14$

$x - \frac{21}{2}y = 35$

$x = \frac{21}{2}y + 35$

$y = \frac{2}{21}(x - 35)$

$y = \frac{2}{21}x - \frac{35}{10.5}$

$y = \frac{2}{21}x - \frac{5}{3}$

$x = \frac{21}{2}(\frac{2}{21}x - \frac{5}{3}) + 35$

$x = x - \frac{35}{2} + 35$

$x = x - \frac{35}{2} + \frac{70}{2}$

$x = x + \frac{35}{2}$

$0 = \frac{35}{2}$

$0 = 17.5$

$(0, -2)$

Sep 6-10:26 AM

Ex 3) $\begin{cases} 2x - 3y = -2 \\ 4x + y = 24 \end{cases}$

Aug 20-4:48 PM

Ex 4) $\begin{cases} 7x + 2y = 16 \\ -21x - 6y = 24 \end{cases}$

A little tricky!!

Aug 20-5:21 PM