Homework review- 7.1

(16) $x+2y=1$ $\quad -x \quad -x$

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

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

$-2x+y=-4$ $\quad +2x \quad +2x$

$y = 2x-4$

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

$-\frac{1}{2} = -\frac{3}{4}+\frac{1\cdot 2}{2\cdot 2}$

$-\frac{1}{2} = -\frac{3}{4}+\frac{2}{4} = -\frac{1}{4}$

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

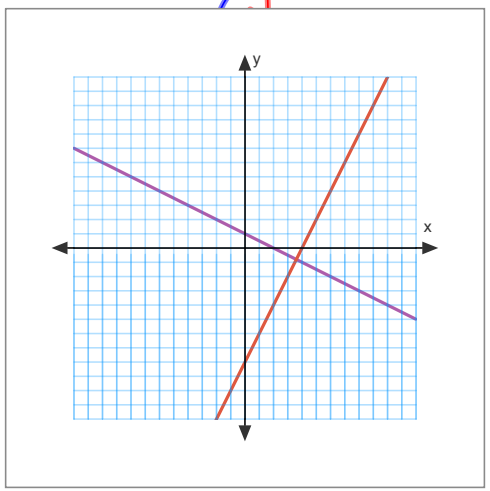
$-\frac{1}{2} = 3-4$

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

$\left(\frac{3}{2}, -\frac{1}{2}\right)$

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

$$y = 2x - 4$$



Solving Linear Equations By Substitution

Algebra

11/01/2011

Solving Linear Systems by Substitution

- There are 4 steps involved:
- Step 1: Solve the equation for EITHER x or y
- Step 2: Substitute the resulting expression for the variable you just solved for in the other equation
- Step 3: Substitute the numerical value of the variable you just found into either equation and solve for the other value
- Step 4: Check your work, see if the answers satisfy the linear equation

Example 1: Step 1

- Step 1: Solve one equation for ***EITHER*** X or Y.
  - Two Equations:
    - 4x+3y= 27
      - AND
    - -2x+y= 14

Tip: Solve the "easiest" one

isolate for 1 variable

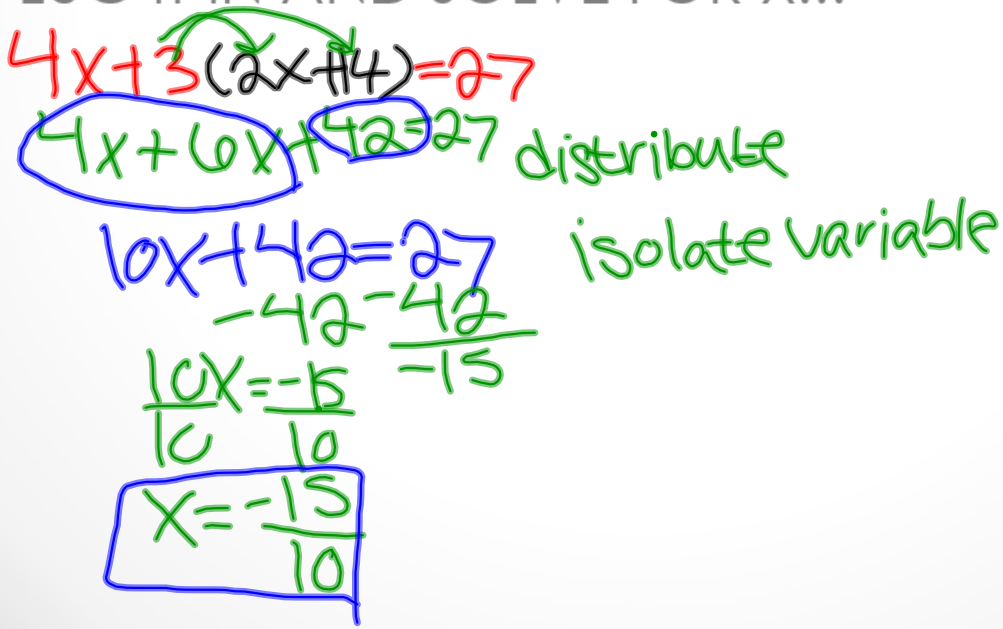
$-2x+y=14$

$+2x \quad +2x$

$y=2x+14$

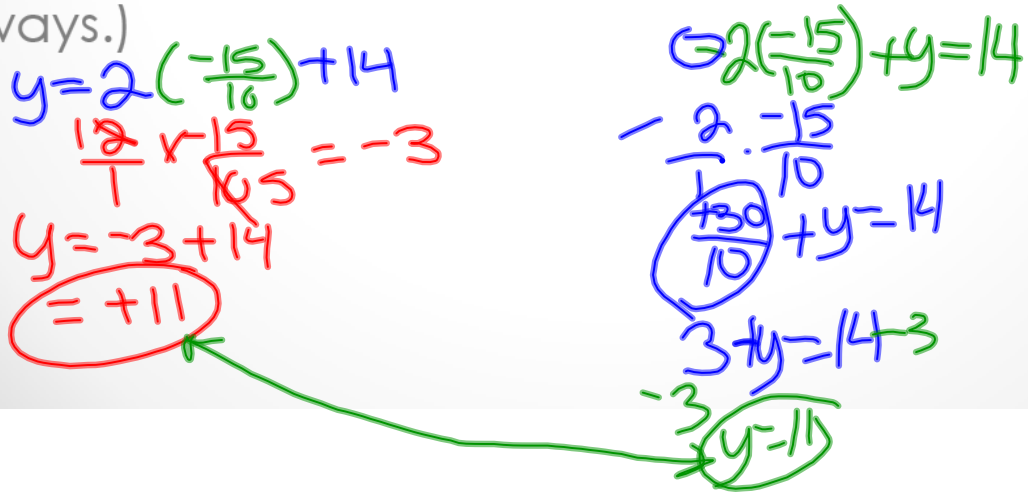
Example 1: Step 2

- Step 2: Substitute the expression from Step 1 into the other equation and solve for the other variable.
  - . y=2x+14
  - 4x+3y=27
  - PLUG IT IN AND SOLVE FOR X!!!



Example 1: Step 3

- Step 3: Substitute the numerical value of the variable found in step 2, and solve for the remaining variable.
  - (In this step we are solving for the number value of y.)
  - X=-15/10
    - plug x into the equation you solved for y.
- y=2x+14 (You can use the unsolved equation for y of -2x+y=14. For practice, we can solve it both ways.)



Example 1 step 4

- Step 4: CHECK YOU WORK!!! You want to make sure that your x and y values satisfy your equations.
  - (X= -15/10) and Y=11
    - Plug x and y into each equation
  - 4x+3y=27

$4\left(\frac{-15}{10}\right)+3(11)=27$

$4\cdot\frac{-15}{10}$

$\frac{-60}{10}-6+33$

$-6+33=27$

$+33-6=27$

$27\checkmark$

- $-2x+y=14$

$-2\left(\frac{-15}{10}\right)+11=14$

$+3+11=14$

$14=14\checkmark$

Now you try!

- X-2y=-6 and 4x+6y=4

$x = 12y - 6$ 9

- TIP!: Remember to follow the steps, ask for help from your neighbor, me, or Mr. Bregar.

$x - 2y = -6$ Step 1 Solve for x or y

$x = (2y - 6)$

$4(2y - 6) + 6y = 4$ Step 2 Substitute!

$4(2y - 6) + 6y = 4$

$8y - 24 + 6y = 4$

$14y - 24 = 4$

$+24 \quad +24$

$\frac{14y}{14} = \frac{28}{14}$ $y = 2$

* Sub. for # value

$4x + (6)(2) = 4$

$4x + 12 = 4 - 12$

-12

$\frac{4x}{4} = \frac{-8}{4}$

$x = -2$

$x - 2y = -6 - x$

$-x$

$\frac{-2y}{-2} = \frac{-6 - x}{-2}$

$y = +3 + \frac{1}{2}x$

$4x + 6(3 + \frac{1}{2}x) = 4$

$4x + 18 + 3x = 4$

$7x + 18 = 4 + 18$

-18

$\frac{7x}{7} = \frac{-14}{7}$

As A Class!

- X-2y=-6 and 4x+6y=4
- Step 1:
- Step 2:

As A Class!

- Step 3:

- Step 4:

Solve the Linear System By Using Substitution

10. $6x - y = -35$
$5x - 2y = -35$

11. $-x + 3y = -9$
$8x - 4y = 32$

12. $3x + 3y = -18$
$4x - y = -14$

12.

Try and solve these equations, then as a class pick one you want to solve all together.

$4x - y = -14 - 4x$
$-4x \quad -4x$
$-y = -14 + 4x$
$\div -1 \quad +1$
$y = 14 + 4x$

$4x - (14 + 4x) = -14$
$4x - 14 - 4x$
$-14 = -14$

$3x + 3(14 + 4x) = -18$
$3x + 42 + 12x = -18$
$15x + 42 = -18$
$-42 \quad -42$
$15x = -18 - 42$
$\frac{15x}{15} = \frac{-60}{15}$
$x = -4$ $y = 2$

STORY PROBLEM TIME!!!

Drum Sticks A drummer is stocking up on drum sticks and brushes. The wood sticks that he buys are $10.50 a pair and the brushes are $24 a pair. He ends up spending $90 on sticks and brushes and buys two times as many pairs of sticks as brushes. How many pairs of sticks and brushes did he buy?

HOMEWORK

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