DO NOW

Frank wants to eliminate the variable y from the system below by adding.

$$\begin{cases} 7x - 6y = 8 \\ 2x + 2y = 6 \end{cases}$$

$7x - 6y = 8$

$6x + 6y = 18$

Which step will enable him to do this?

a. Multiply $7x - 6y = 8$ by 3

b. Multiply $7x - 6y = 8$ by -3

c. Multiply $2x + 2y = 6$ by 3

d. Multiply $2x + 2y = 6$ by -3

Nov 20-10:59 AM

HW Answers

p. 289

3. $(2, -3)$

4. $(-9, 1)$

5. $(4, -6)$

6. $(-\frac{1}{2}, 3)$ or $(-.5, 3)$

7. $(-4, -1)$

8. $(\frac{-1}{5}, -2)$ or $(-.2, -2)$

Nov 21-6:54 AM

Methods to Solve a System of Equations

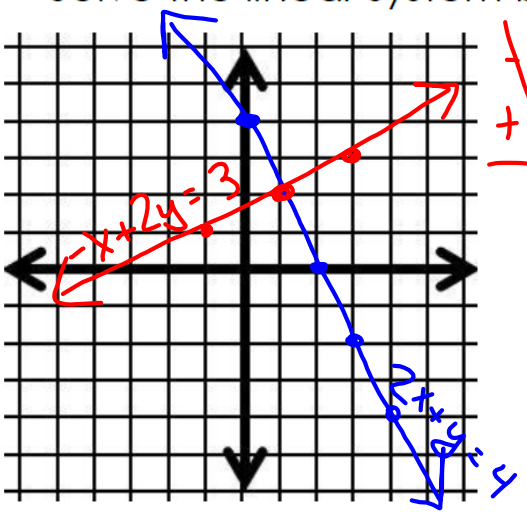
- Graphically $y = mx + b$ two lines on same coordinate plane
- Algebraically
  - > Elimination → Lined up
  - > Substitution → $x =$ or $y =$ Variable isolated

Oct 20-9:37 AM

Example 1:

Solve the linear system by graphing.

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



$-x + 2y = 3$

$+x \quad +x$

$2y = x + 3$

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

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

$-2x \quad -2x$

$y = -2x + 4$

x	y
3	3
1	2
-1	1

Solution (1, 2)

Nov 3-11:21 AM

Example 2:

Solve the linear system using the elimination method.

$$\begin{cases} 4x - 3y = 5 \\ -2x + 3y = -7 \end{cases}$$

$4x = -2$

$\frac{4x}{4} = \frac{-2}{2}$

$x = -1$

$-2x + 3y = -7$

$-2(-1) + 3y = -7$

$2 + 3y = -7$

$-2 \quad -2$

$3y = -9$

$\frac{3y}{3} = \frac{-9}{3}$

$y = -3$

Solution $(-1, -3)$

Check

$4x - 3y = 5$

$4(-1) - 3(-3) = 5$

$-4 + 9 = 5$

$5 = 5$

$-2x + 3y = -7$

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

$2 - 9 = -7$

$-7 = -7$ ✓

Nov 3-11:22 AM

Example 3:

Solve the linear system using the substitution method.

$$\begin{cases} y = 2x + 5 \\ 3x + y = 10 \end{cases}$$

$3x + (2x + 5) = 10$

$3x + 2x + 5 = 10$

$5x + 5 = 10$

$-5 \quad -5$

$\frac{5x}{5} = \frac{5}{5}$

$x = 1$

$y = 2x + 5$

$y = 2(1) + 5$

$y = 2 + 5$

$y = 7$

Solution $(1, 7)$

Check

$3x + y = 10$

$3(1) + 7 = 10$

$3 + 7 = 10$

$10 = 10$ ✓

$y = 2x + 5$

$7 = 2(1) + 5$

$7 = 2 + 5$

$7 = 7$ ✓

Nov 3-11:22 AM

Choosing a Method to Solving Systems of Equations Algebraically

Elimination Method

Terms should "line up"

May need to multiply equations by a constant to get terms to "cancel out"

When every variable has a coefficient ≠ 1

Substitution Method

Use when one equation is solved for a variable (x = or y =)

Dec 9-6:45 AM

Select which Method would be most appropriate to solve each system algebraically

1. $x = 4y - 10$
$5x + 3y = -4$
Substitution $x =$

2. $x + 3y = 18$
$-x + 2y = 7$
Elimination Lined up

3. $6x + 10y = 4$
$3x + 5y = 12$
Elimination Lined up Coefficients ≠ 1

4. $y = 2x - 5$
$6x - 3y = 15$
Substitution $y =$

Oct 20-9:27 AM