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Objectives:

→learn how to solve a system of linear equation through elimination

Standards: 2.2, 2.5, 2.8

Solving Linear Systems by Linear Combinations

- Chapter 7 Section 3

Solving Using Elimination/Combination

- Steps:
  - 1. Choose a Variable to Eliminate
  - 2. Multiply thru equation to set it up
  - 3. Add Equations
  - 4. Solve for variable remaining
  - 5. Plug in to find the variable eliminated
    - Example:

$$\begin{array}{r} 5x + y = 10 \\ +\ 3x - y = 6 \\ \hline 8x = 16 \end{array}$$

$8x = 16 \rightarrow x = 2$

$5x + y = 10$

$5(2) + y = 10$

$10 + y = 10$

$y = 0$

Examples:

1. $4x+3y=16$
   $2x-3y=8$

$6x = \frac{24}{6}$

$x = 4$

$4(4)+3y=16$

$16+3y=16$

$-16 \quad -16$

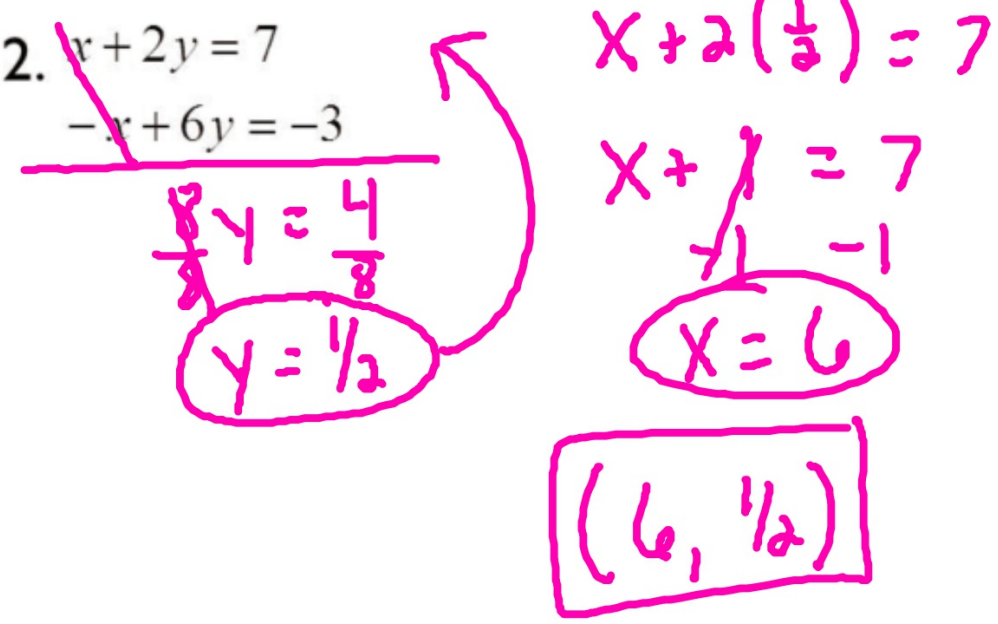
$\frac{3y}{3} = \frac{0}{3}$

$y = 0$

$(4, 0)$

Examples:

- 2. $x + 2y = 7$
  $-x + 6y = -3$



Examples:

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

$10x - 8y = 6$
$2x + 8y = -2$

$12x = 4$

$x = \frac{4}{12} = \frac{1}{3}$

$2\left(\frac{1}{3}\right) + 8y = -2$

$\frac{2}{3} + 8y = -2$

$+24y = -6$

$\frac{24}{24}y = \frac{-8}{24} \rightarrow y = \frac{-1}{3}$

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

Examples:

- 4. $\begin{cases} 3x+5y=6 \\ -4x+2y=5 \end{cases}$ $\begin{matrix})2 \\ )-5 \end{matrix}$

$6x+10y=12$

$20x-10y=-25$

$26x=-13$

$\frac{26x}{26}=\frac{-13}{26}$

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

$-4\left(-\frac{1}{2}\right)+2y=5$

$2+2y=5$

$-2 \quad -2$

$2y=3$

$y=3/2$

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

Class Work

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Homework

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