

Name

6.3 Solve Linear Systems

Alg I

by Adding or Subtracting

I can solve linear systems using elimination.

Steps to Solve Systems Using Elimination

- 1) Add/Subtract to eliminate 1 variable.
- 2) Solve the new equation for 1st variable.
- 3) Substitute to solve for 2nd variable.

Semester Exam

Example 1:

$$1) \quad 4x - 3y = 5 \quad \rightarrow \quad 4x - 3y = 5$$

$$\quad -2x + 3y = -7 \quad \rightarrow \quad 4(-1) - 3y = 5$$

$$\begin{array}{r} 2x = -2 \\ \hline 2 \quad 2 \\ \hline x = -1 \end{array}$$

$$\begin{array}{r} 4 - 3y = 5 \\ +4 \quad +4 \\ \hline -3y = 9 \end{array}$$

(-1, -3)

$$\begin{array}{r} -3y = 9 \\ \hline -3 \quad -3 \\ \hline y = -3 \end{array}$$

$$y = -3$$

$$2) \quad -5x - 6y = 8 \quad \rightarrow \quad -5x - 6y = 8$$

$$\quad 5x + 2y = 4 \quad \rightarrow \quad -5x - 6(-3) = 8$$

$$\begin{array}{r} -4y = 12 \\ \hline -4 \quad -4 \\ \hline y = -3 \end{array}$$

$$\begin{array}{r} -5x + 18 = 8 \\ \hline -18 \quad -18 \\ \hline -5x = -10 \end{array}$$

(2, -3)

$$\begin{array}{r} -5x = -10 \\ \hline -5 \quad -5 \\ \hline x = 2 \end{array}$$

$$x = 2$$

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$$3) \begin{cases} 6x - 4y = 14 \\ -3x + 4y = 1 \end{cases} \rightarrow \begin{matrix} 6x - 4y = 14 \\ \underline{-3x + 4y = 1} \\ 3x = 15 \end{matrix}$$

$$\frac{3x}{3} = \frac{15}{3}$$

$$x = 5$$

$$\begin{matrix} 3x - 4y = 14 \\ \underline{-3x} \\ -4y = -16 \end{matrix}$$

$$\frac{-4y}{-4} = \frac{-16}{-4}$$

$$y = 4$$

$$\boxed{(5, 4)}$$

Semester Exam

Example 2:

$$4) \begin{cases} 7x - 2y = 5 \\ -1(7x - 3y = 4) \end{cases} \rightarrow \begin{matrix} 7x - 2y = 5 \\ \underline{-7x + 3y = -4} \\ 7x - 3y = 4 \end{matrix}$$

$$\begin{matrix} 7x - 3y = 4 \\ \underline{+3 \quad +3} \\ 7x = 7 \end{matrix}$$

$$7x = 7$$

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

$$x = 1$$

$$7x = 7$$

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

$$y = 1$$

$$\boxed{(1, 1)}$$

Example 3:

$$5) \begin{cases} 3x + 4y = -6 \\ 2y = 3x + 6 \end{cases} \rightarrow \begin{matrix} 3x + 4y = -6 \\ \underline{-3x + 2y = 6} \\ 6y = 0 \end{matrix}$$

$$2y = 3x + 6$$

$$\underline{-3x + 2y = 6}$$

$$\frac{6y}{6} = \frac{0}{6}$$

$$2y = 3x + 6$$

$$0 = 3x + 6$$

$$y = 0$$

$$\frac{-6}{3} = \frac{3x}{3}$$

$$x = -2$$

$$\boxed{(-2, 0)}$$

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* Complete Skills practice, pg. 389, #

$$\begin{aligned} 6) \quad 2x + 5y &= 12 \rightarrow 2x + 5y = 12 \rightarrow 2x + 5y = 12 \\ & \quad 5y = 4x + 6 \quad -1(-4x + 5y = 6) \Rightarrow 4x - 5y = -6 \end{aligned}$$

$$2(1) + 5y = 12$$

$$2 + 5y = 12$$

$$\begin{array}{r} -2 \\ \hline \end{array} \quad \begin{array}{r} -2 \\ \hline \end{array}$$

$$\frac{5y}{5} = \frac{10}{5}$$

$$y = 2$$

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

$$x = 1$$

$(1, 2)$

1. Name

2. Nr.

some linear system

of 3 equations in 3 variables

$$\begin{cases} 2x + 3y = 13 \\ 3x + 2y = 12 \\ x + y = 3 \end{cases}$$

$$\begin{aligned} x &= 1 \\ y &= 2 \end{aligned}$$

$$\begin{aligned} 2x + 3y &= 13 \\ 3x + 2y &= 12 \end{aligned}$$

$$2x + 3y = 13$$

$$3x + 2y = 12$$

$$x + y = 3$$

(1, 2)

I can solve linear system

substitution

max

substitution

substitution

substitution

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