

Daily Agenda

Learning Target: I can solve a system of equations in three variables.

Homework	Assessments
2.2 Worksheet	2.1 to 2.2 Quiz - 9/23 Calc and No Calc

You must do the things you think you cannot do.  
-Eleanor Roosevelt

Nov 15-8:24 PM

To solve, we need to use RREF (Reduced Row Echelon Form)

$$\begin{bmatrix} 1 & 0 & \# \\ 0 & 1 & \# \\ \times & \gamma & \# \end{bmatrix} \begin{matrix} |x = \# \\ |y = \# \\ \end{matrix}$$

$$10x - 3y = 46$$

$$x - 7y = 18$$

Steps

Enter Matrix Menu  
Edit, Matrix A (2x3)  
Enter Values  
Quit  
Enter Matrix Menu  
MATH, RREF  
Enter Matrix Menu  
Choose Matrix Name  
Enter

Sep 15-10:36 PM

Solve Using Augmented Matrices

$$4x - 3y = 17$$

$$2x - 9y = 38$$

$$x = 1.3 \text{ or } \frac{13}{10}$$

$$y = -3.93 \text{ or } -\frac{59}{15}$$

Sep 15-10:40 PM

2.2 Systems with Three Variables

When we solve a system with 3 variables, our solution will be (x,y,z)

Steps

- Choose a variable to eliminate
- Make 2 new equations (if needed)
- Solve like a 2x2
- Find 3rd variable
- Check your answer

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Solve

$$\begin{matrix} 2x - y - z = 7 & (1, -2, -3) \\ 3x + 5y + z = -10 \\ 4x - 3y + 2z = 4 \end{matrix}$$

$$2(2x - y - z = 7) \rightarrow 4x - 2y - 2z = 14$$

$$4x - 3y + 2z = 4$$

$$\hline 8x - 5y = 18$$

$$5 + 4y = -3$$

$$4y = -8$$

$$y = -2$$

$$2x - (-2) - z = 7$$

$$2x - z = 5$$

$$2x - 3y + z = -10$$

$$3x + 5y + z = -10$$

$$\hline 5x + 4y = -3$$

$$5(5x + 4y = -3) \rightarrow 25x + 20y = -15$$

$$4(8x - 5y = 18) \rightarrow 32x - 20y = 72$$

$$\hline 57x = 57$$

$$x = 1$$

$$4(1) - 3(-2) + 2z = 4$$

$$4 + 6 + 2z = 4$$

$$2z + 10 = 4$$

$$2z = -6$$

$$z = -3$$

(1, -2, -3)

Sep 13-7:35 AM

Solve

$$\begin{matrix} 4y + 2z = -6 \\ 2x - 3y = 5 \\ 5x + 7z = -15 \end{matrix}$$

$$-5(2x - 3y = 5) \rightarrow -10x + 15y = -25$$

$$2(5x + 7z = -15) \rightarrow 10x + 14z = -30$$

$$\hline 15y + 14z = -55$$

$$7(4y + 2z = -6) \rightarrow 28y + 14z = 42$$

$$\hline -13y = -97$$

$$y = 1$$

$$2x - 3(1) = 5 \rightarrow 2x - 3 = 5$$

$$2x = 8$$

$$x = 4$$

$$15y + 14z = -55$$

$$15(1) + 14z = -55$$

$$14z = -70$$

$$z = -5$$

Sep 13-7:35 AM

**In Closing...**

Name all the methods to solve a system of equations. Can we use substitution to solve a system with three variables?

Sep 9-7:48 AM