ANSWER PRESENTATION TOOL

Algebra 2 - Student Edit 1 4 - Practice 2-12 ALL EVEN Show Solu

ODD

2. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} x + 4y - 6z = -1 \\ -x + 2y - 4z = 5 \\ \hline 6y - 10z = 4 \end{array}$$

$$\begin{array}{r} 2x - y + 2z = -7 \\ -2x + 4y - 8z = 10 \\ \hline 3y - 6z = 3 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} 6y - 10z = 4 \\ -6y + 12z = -6 \\ \hline 2z = -2 \\ z = -1 \\ y = -1 \end{array}$$

Step 3 Substitute $y = -1$ and $z = -1$ into an original equation and solve for x.

$$\begin{array}{r} x + 4y - 6z = -1 \\ x + 4(-1) - 6(-1) = -1 \\ x - 4 + 6 = -1 \\ x = -3 \end{array}$$

The solution is $(-3, -1, -1)$.

4. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} 5x + y - z = 6 \\ x + y + z = 2 \\ \hline 6x + 2y \phantom{{}+z} = 8 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} -12x - 4y = -16 \\ 12x + 4y = 10 \\ \hline 0 = -6 \end{array}$$

Because you obtain a false equation, the original system has no solution.

6. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} 3x + 2y - z = 8 \\ -3x + 4y + 5z = -14 \\ \hline 6y + 4z = -6 \end{array}$$

$$\begin{array}{r} -3x + 4y + 5z = -14 \\ 3x - 9y + 12z = -42 \\ \hline -5y + 17z = -56 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} 30y + 20z = -30 \\ -30y + 102z = -336 \\ \hline 122z = -366 \\ z = -3 \\ y = 1 \end{array}$$

Step 3 Substitute $z = -3$ and $y = 1$ into an original equation and solve for x.

$$\begin{array}{r} x - 3y + 4z = -14 \\ x - 3(1) + 4(-3) = -14 \\ x - 3 - 12 = -14 \\ x = 1 \end{array}$$

The solution is $(1, 1, -3)$.

8. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} 2x + 4y - 2z = 6 \\ -2x - \ \ y + \ \ z = -1 \\ \hline 3y - z = 5 \end{array}$$

$$\begin{array}{r} -6x - 3y + 3z = -3 \\ 6x - 3y - \ \ z = -7 \\ \hline -6y + 2z = -10 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} -6y - 2z = 10 \\ -6y + 2z = -10 \\ \hline 0 = 0 \end{array}$$

Because you obtain the identity $0 = 0$, the system has infinitely many solutions.

Step 3 Solve new Equation 2 for z to obtain $z = 3y - 5$. Then substitute $3y - 5$ for z in original Equation 1 to obtain $y = x + 2$. Then $z = 3x + 1$. A solution of the system can be represented by any ordered triple of the form $(x, x + 2, 3x + 1)$.

10. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{array}{r} -2x - 3y + z = -6 \\ 2x + 2y - 2z = 10 \\ \hline -y - z = 4 \end{array}$$

$$\begin{array}{r} -7x - 7y + 7z = -35 \\ 7x + 8y - 6z = 31 \\ \hline y + z = -4 \end{array}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{array}{r} -y - z = 4 \\ y + z = -4 \\ \hline 0 = 0 \end{array}$$

Because you obtain the identity $0 = 0$, the system has infinitely many solutions.

Step 3 Solve new Equation 3 for z to obtain $z = -y - 4$. Then substitute $-y - 4$ for z in original Equation 2 to obtain $x = -2y + 1$. A solution of the system can be represented by any ordered triple of the form $(-2y + 1, y, -y - 4)$.

12. Step 1 Rewrite the system as a linear system in two variables.

$$\begin{aligned} 3x + 2y - 3z &= -2 \\ 7x - 2y + 5z &= -14 \\ \hline 10x + \quad\quad 2z &= -16 \\ 5x + \quad\quad z &= -8 \end{aligned}$$

$$\begin{aligned} 2x + 4y + \quad z &= 6 \\ 14x - 4y + 10z &= -28 \\ \hline 16x + \quad\quad 11z &= -22 \end{aligned}$$

Step 2 Solve the new linear system for both of its variables.

$$\begin{aligned} 16x + 11z &= -22 \\ -55x - 11z &= 88 \\ \hline -39x \quad\quad &= 66 \\ x &= -\frac{22}{13} \\ z &= \frac{6}{13} \end{aligned}$$

Step 3 Substitute $x = -\frac{22}{13}$ and $z = \frac{6}{13}$ into an original equation and solve for y.

$$\begin{aligned} 2x + 4y + z &= 6 \\ 2\left(-\frac{22}{13}\right) + 4y + \frac{6}{13} &= 6 \\ y &= \frac{29}{13} \end{aligned}$$

The solution is $\left(-\frac{22}{13}, \frac{29}{13}, \frac{6}{13}\right)$.