

Answer on Question #78887 - Math - Linear Algebra

Use Gaussian elimination method to solve the following equation.

$$2x-3y+2z=6$$

$$x+4y-3z=12$$

$$3x-5y+2z=8$$

**Solution.**

$$\begin{bmatrix} 2 & -3 & 2 & 6 \\ 1 & 4 & -3 & 12 \\ 3 & -5 & 2 & 8 \end{bmatrix} \rightarrow$$

subtract row1 from row3

$$\rightarrow \begin{bmatrix} 2 & -3 & 2 & 6 \\ 1 & 4 & -3 & 12 \\ 1 & -2 & 0 & 2 \end{bmatrix} \rightarrow$$

multiply row2 by 2 & add to row2 3\*row1

$$\rightarrow \begin{bmatrix} 2 & -3 & 2 & 6 \\ 8 & -1 & 0 & 42 \\ 1 & -2 & 0 & 2 \end{bmatrix} \rightarrow$$

subtract from row2 8\*row3 & divide row2 by 15 & add to row3 2\*row2

$$\rightarrow \begin{bmatrix} 2 & -3 & 2 & 6 \\ 0 & 1 & 0 & \frac{26}{15} \\ 1 & 0 & 0 & \frac{82}{15} \end{bmatrix} \rightarrow$$

subtract from row1 2\*row3 & add to row1 3\*row2 & divide row1 by 2

$$\rightarrow \begin{bmatrix} 0 & 0 & 1 & \frac{2}{15} \\ 0 & 1 & 0 & \frac{26}{15} \\ 1 & 0 & 0 & \frac{82}{15} \end{bmatrix}$$

**Answer:**  $x = \frac{82}{15}, y = \frac{26}{15}, z = \frac{2}{15}$