

$$\begin{array}{l} x - 2y + z = 0 \\ \text{For the given system: } \quad 2y - 8z = 8 \quad \text{the corresponding augmented} \\ \quad \quad \quad -4x + 5y + 9z = -9 \end{array}$$

matrix is:

$$\begin{pmatrix} 1 & -2 & 1 & 0 \\ 0 & 2 & -8 & 8 \\ -4 & 5 & 9 & -9 \end{pmatrix}. \text{ Now we apply the elementary row operations on}$$

this to have the reduced Echelon form.

$$\text{By } R'_3 \rightarrow R_3 + 4R_1$$

$$\begin{pmatrix} 1 & -2 & 1 & 0 \\ 0 & 2 & -8 & 8 \\ 0 & -3 & 13 & -9 \end{pmatrix}$$

$$\text{By } R'_2 \rightarrow \left(\frac{1}{2}\right)R_2$$

$$\begin{pmatrix} 1 & -2 & 1 & 0 \\ 0 & 1 & -4 & 4 \\ 0 & -3 & 13 & -9 \end{pmatrix}$$

$$\text{By } R'_3 \rightarrow R_3 + 3R_2, R'_1 \rightarrow R_1 + 2R_2$$

$$\begin{pmatrix} 1 & 0 & -7 & 8 \\ 0 & 1 & -4 & 4 \\ 0 & 0 & 1 & 3 \end{pmatrix}$$

$$\text{By } R'_2 \rightarrow R_2 + 4R_3, R'_1 \rightarrow R_1 + 7R_3$$

$$\begin{pmatrix} 1 & 0 & 0 & 29 \\ 0 & 1 & 0 & 16 \\ 0 & 0 & 1 & 3 \end{pmatrix}$$

i.e. the matrix in reduced Echelon form which \implies the required solution is $\{x_1 = x = 29, x_2 = y = 16, x_3 = z = 3\}$