Using your TI-83 Graphing Calculator to Solve Systems of Linear Equations

System of Equations **Corresponding Augmented Matrix**

Solve: $\begin{cases} x + 2y = -4 \\ 3x - y + z = -2 \\ 4x + 2y - 3z = -19 \end{cases} \Rightarrow \begin{bmatrix} 1 & 2 & 0 & -4 \\ 3 & -1 & 1 & -2 \\ 4 & 2 & -3 & -19 \end{bmatrix}$

3 rows × 4 columns

Format the Matrix

2nd MATRX
EDIT
1: [A]
[Enter]
MATRIX [A] 3 × 4 ← Enter the Dimensions of the Matrix (Rows × Columns)

Enter the Entries of the Matrix

Enter the Coefficients of x, y, z and the Constant.
1 [ENTER] 2 [ENTER] 0 [ENTER] – 4 [ENTER]
3 [ENTER] –1 [ENTER] 1 [ENTER] – 2 [ENTER]
4 [ENTER] 2 [ENTER] – 3 [ENTER] – 19 [ENTER]

2nd QUIT to Exit the Matrix Mode
[CLEAR] to Clear the Screen

Transform the Matrix to Reduced Row Echelon Form

2nd MATRX
Math
B: rref(← Scroll Down to **r**educed **r**ow **e**chelon **f**orm
[ENTER]
2nd MATRX
NAMES
1: [A] 3 × 4
[ENTER]
[ENTER]

Interpret the Matrix and State the Solution

$$\begin{matrix} x & y & z & \\ \end{matrix}$$
$$\begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & -1 \\ 0 & 0 & 1 & 3 \end{bmatrix} \Rightarrow \begin{matrix} x = -2 \\ y = -1 \\ z = 3 \end{matrix}$$