Using Matrices to Solve a System of Equations on a TI-92

$$\text{Solve}: \begin{cases} x - y + z = 8 \\ 2x + 3y - z = -2 \\ 3x - 2y - 9z = 9 \end{cases}$$

You may want to begin by clearing all variables and equations from your calculator.

On the HOME Screen
F1: Tools
8: Clear Home
Clear

F6: Clear a - z
Enter

Diamond Y=
F1: Tools
8: Clear Functions
Enter

To solve we need to enter and name the augmented matrix.

$$\left[\begin{array}{ccc|c} 1 & -1 & 1 & 8 \\ 2 & 3 & -1 & -2 \\ 3 & -2 & -9 & 9 \end{array}\right]$$

Apps
6: Data/Matrix Editor
3: New
Type: **2 Matrix**
Folder: **Math** (or folder of your choice)
Variable: **a** (or any name you want to give it)
Row dimension: **3**
Col dimension: **4**
Enter
Enter

Fill in the numbers. When you hit enter, the cursor moves to the next space to the right in the row. At the end of the row, the cursor moves to the beginning of the next row.

To Solve: (Be sure your current folder is the folder in which you stored the matrix. Check the lower left hand corner to see the current folder. If that's not where you stored it, press **MODE** , highlight **Current Folder**, **Arrow right** and then select the correct folder. Press **Enter** to save the change.)

Diamond HOME
rref(a) (You can key in this command or do **2nd Catalog** then scroll down to **rref(** then **Enter**)
Enter

This gives the reduced row echelon form.

The solution is $x = 4$, $y = -3$, $z = 1$.