

“How to Solve A Linear System Of Equations Using A TI Calculator”

Consider the linear system:

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

We can write this as the following

$$[A]\{x\} = \{r\}$$

We seek the solution vector $\{x\}$ by taking the inverse of $[A]$ and multiplying it by the right hand side vector $\{r\}$ as follows

$$\{x\} = [A]^{-1}\{r\}$$

To do this with your TI calculator, follow the steps outlined below:

1. Key in the $[A]$ matrix on your TI as follows using the [and] brackets and a semicolon to separate each row of the matrix:

[1,2,3;0,2,1;1,0,0]

2. Next take the inverse of $[A]$ by hitting the inverse or 1/x button on your TI, your TI display should show the following

$$\begin{bmatrix} 0 & 0 & 1 \\ -0.25 & 0.75 & 0.25 \\ 0.5 & -0.5 & -0.5 \end{bmatrix}$$

3. Next key in the right hand side vector as follows:

[1;-2;3]

4. Lastly, hit the multiplication button * on the TI to multiply the inverse of $[A]$ by the right hand side vector $\{r\}$, your display should look similar to the following:

$$\begin{Bmatrix} 3 \\ -1 \\ 0 \end{Bmatrix}$$

5. Thus, for this example $x = 3$, $y = -1$, $z = 0$