## Producing a Reduced Row Echelon Form (RREF) Matrix Using the TI-83+

**Step 1:** Invoke the matrix editor, and enter the values that corresponding to the coefficients and constants for the system of linear equations. (If you are unsure how to enter a matrix, see one of the handouts for Cramer's Rule.) Let's assume you entered a matrix for a system of linear equations in three variables as matrix 5: [E].

When you are finished entering the matrix values, quit the matrix editor.

**Step 2:** Invoke the matrix editor again, and access the MATH menu:

2nd $x^{-1}$ ► MATH

**Step 3:** Scroll down to B: reff ( and press ENTER to invoke the rref ( ) feature. The screen will look like the following:

rref (

**Step 4:** Specify the name of the matrix that you want to produce in reduced row echelon form. (In our example, the matrix name is [E], which corresponds to number 5 on the NAMES menu):

2nd $x^{-1}$ NAMES 5

The screen will look like the following:

rref ( [E]

Close the parentheses and press ENTER:

rref ( [E] ) ENTER

The result will be a matrix similar to the following:

$$\begin{bmatrix} 1 & 0 & 0 & -2 \\ 0 & 1 & 0 & 12 \\ 0 & 0 & 1 & 5 \end{bmatrix}$$

**Step 5:** Interpret the results.

The value of the last element in the first row is the $x$-coordinate of the solution.
The value of the last element in the second row is the $y$-coordinate of the solution.
The value of the last element in the third row is the $z$-coordinate of the solution.

**Step 6:** Write the solution as an ordered triple $(x, y, z)$. In this example, the solution is the ordered triple (-2, 12, 5).