This first example asks us to write the system of equation as a matrix. To write this as a matrix, we will turn every equation into a row. With the x's, y's, z's and constants lined up on top of each other, we just need to write the constants as each row. The first row is 1, 2, negative 1, 3. The second row is 2, negative 1, 2, 6. The third row is one, negative 3, 3, and 4. Some books will add a dashed line to indicate the equal signs.

Example 2 wants us to solve this system with Gaussian elimination. First, convert the system into a matrix. The matrix is 2, 3, 6, and then 1, negative 1, one half.

To enter the matrix on your TI calculator, press MATRIX and go to the EDIT menu. Press 1 to edit matrix A. The dimensions of the matrix is 2 by 3. Type the entries of the matrix into the calculator. Type 2ND and QUIT to get back to the home screen.

To row reduce the matrix, type MATRIX and go to MATH. Press down to get the RREF command. Next, type MATRIX and press 1 to bring matrix A to the home screen. Close the parentheses and press ENTER.

The resulting matrix is 1, 0, 1.5 and 0, 1, 1. This is equivalent to x equals 1.5 and y equals 1. That is the solution to the system of equations.

If you want to convert the entries of a matrix to fractions type MATH and 1. That will convert the last answer to a fraction.

The last example asks us to solve a system of equations with three variables. The nice thing about solving a system of equations with a calculator is that more variables doesn't add much new work.

Go to the MATRIX menu and edit matrix A. Change the dimensions to 3 by 4. Type in each row of the matrix by using the constants from the equation.

Once you are done editing the matrix, go to MATRIX, MATH and rref. Then go to MATRIX and select matrix A. Close the parentheses and type MATH and 1 to convert the answer automatically to fractions.

The row-reduced matrix tells us that x equals 61 over 187, y equals negative 92 over 187, and z equals negative 24 over 187. It is possible to solve this system by hand, but you really don't want to do that.