3.8 Tech Lab
Using Augmented Matrices to Solve Systems of Equations

For the system:

$$2x + y + z = 1$$
$$3x + 2y + 3z = 12$$
$$4x + y + 2z = -1$$

Write an augmented matrix

$$\left[\begin{array}{ccc|c} 2 & 1 & 1 & 1 \\ 3 & 2 & 3 & 12 \\ 4 & 1 & 2 & -1 \end{array}\right]$$

After entering the matrix into TI84, exit to home screen

Use the Matrix Math menu and locate

rref (reduced row echelon form)

enter

Choose your matrix

enter

Example: Use an augmented matrix to solve the following system:

$4x - 3y + 6z = 18$
$-x + 8y + 4z = 48$
$6x - 2y + 5z = 0$

1. $3x+2y=-4$
   $4x+7y=13$

2. $2x+y=6$
   $6x-2y=0$

3. $4x+6y=0$
   $8x-2y=7$

4. $6x-4y+2z=-4$
   $2x-2y+6z=10$
   $2x+2y+2z=-2$

5. $5x-5y+5z=10$
   $5x-5z=5$
   $5y+10z=0$

6. A sporting goods store sells footballs, basketballs and volleyballs. A football costs $35, a basketball costs $25, and a volleyball costs $15. On a given day, the store sold 5 times as many footballs as volleyballs. They brought in a total of $3750 that day, and the money made from basketballs alone was 4 times the money made from volleyballs alone. How many footballs, basketballs and volleyballs were sold?