

Math 1050, Problem Set #10**Name:**Due: Thursday, August 5th. *Show all work for partial credit!*

1. Write out the system of equations in the variables x , y , and z corresponding to the following augmented matrix:

$$\left[\begin{array}{ccc|c} -3 & 2 & 4 & 4 \\ 1 & 0 & 6 & -3 \end{array} \right]$$

2. Perform the given row operations on the following augmented matrix:

$$\left[\begin{array}{ccc|c} 1 & -1 & 3 & 2 \\ -2 & 3 & 4 & 0 \\ 3 & 0 & 1 & 1 \end{array} \right]$$

(a) $R_3 = -3r_1 + r_3$

(b) $R_2 = -\frac{1}{2}r_2$

3. Using the row echelon form below, find all solutions to the corresponding system via back substitution.

$$\left[\begin{array}{ccc|c} 1 & -1 & 3 & 0 \\ 0 & 1 & -2 & 4 \\ 0 & 0 & 1 & 3 \end{array} \right]$$

4. Use matrix reduction to solve the following system:

$$\begin{cases} x - y + z = -4 \\ 2x - 3y + 4z = -15 \\ 5x + y - 2z = 12 \end{cases}$$

5. Suppose we want to find a quadratic of the form $y = ax^2 + bx + c$ that passes through the three points $(1, -1)$, $(3, -1)$, and $(-2, 14)$. Substitute into the quadratic to arrive at a system of three equations in three unknowns a , b , and c . *Simply write down the system, do not solve for the unknowns.*