Exam 1– MATH 332 – Summer 2007

Directions: Make sure to show all necessary work to receive full credit. If you need extra space please use the back of the sheet with appropriate labeling. Buena suerte.

1. Change the following system of linear equations into an augmented matrix.

$$2x + 3y + 2z = 2$$
$$4x \qquad - 3z = 1$$
$$2x + 4y + z = 3$$

$$A = \begin{bmatrix} & & \\ & & \\ & & \end{bmatrix}$$

Next, use the rest of this sheet (and the back if necessary) to put the matrix into **reduced echelon form**. Once you have done that, use the matrix that you obtain to find the solution set of the original system of linear equations.

2. Determine the value of x so that the matrix is an augmented matrix of a consistent linear system (over $\mathbb{R}$.)

$$\begin{bmatrix} 10 & 5 & 3 \\ 4 & 2 & x \end{bmatrix}$$

3. Determine the general solution of the following augmented matrix over $\mathbb{R}$. Circle the pivot positions and label the basic and free variables.

$$\begin{bmatrix} 1 & 0 & -5 & 1 \\ 0 & 1 & 1 & 4 \\ 0 & 0 & 0 & 0 \end{bmatrix}$$

4. Circle your answer to the following questions.

   1. True or False: A 5×6 matrix has 6 rows.

   2. True or False: Two matrices are row equivalent if they have the same number of rows.

   3. True or False: A consistent system has more than one solution.

   4. True or False: The reduced echelon form of a matrix is unique.

   5. True or False: A basic variable in a linear system is a variable that corresponds to a pivot column in the coefficient matrix.