

MATH 1302, WINTER 2009
ASSIGNMENT 1: DUE JANUARY 23

For all of the questions below, you must show each step in any row reduction and state what operation you are performing at each step.

1. **(5 points)** Solve the following system. Check your answer.

$$\begin{array}{rccccrcr} x_1 & + & x_2 & & & = & 0 \\ 6x_1 & + & 2x_2 & - & x_3 & = & 2 \\ & & -3x_2 & + & x_3 & = & 5 \end{array}$$

2. **(4 points)** Determine if the system corresponding to the following augmented matrix is consistent or inconsistent (you do not need to completely solve the system if it is consistent).

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

3. **(6 points)** Find the general solution of the following system. Indicate which variables are basic and which are free. Check your answer.

$$\begin{array}{rccccrcr} x_1 & + & 2x_2 & - & x_3 & + & 2x_4 & = & 1 \\ x_1 & + & 2x_2 & + & x_3 & & & = & 5 \\ -2x_1 & - & 4x_2 & + & x_3 & - & 3x_4 & = & -4 \end{array}$$