Dawson College: **Linear Algebra**: 201-105-05-S4: Fall 2012

Name: _____
Student ID: _____

Quiz 1

This quiz is graded out of 10 marks. No books, calculators, notes or cell phones are allowed. You must show all your work, the correct answer is worth 1 mark the remaining marks are given for the work. If you need more space for your answer use the back of the page.

Question 1. §1.1 #1c *(1 mark)* Determine whether the equation is linear in x_1, x_2, and x_3:

$$x_1 = -7x_2 + 3x_3$$

Question 2. §1.1 #3c *(1 mark)* Determine whether the equations form a linear system.

$$\begin{array}{rcrcrcr} 7x_1 & - & x_2 & + & 2x_3 & = & 0 \\ 2x_1 & + & x_2 & - & x_3x_4 & = & 3 \\ -x_1 & + & 5x_2 & - & x_4 & = & -1 \end{array}$$

Question 3. §1.1 #12b *(2 marks)* Find a system of linear equations correcponding to the given augmented matrix.

$$\begin{bmatrix} 0 & 3 & -1 & -1 & -1 \\ 5 & 2 & 0 & -3 & -6 \end{bmatrix}$$

Question 3. §1.1 #13c *(2 marks)* Find the augmented matrix for the given system of linear equations

$$\begin{array}{rcrcrcrcrcr} & & 2x_2 & & & - & 3x_4 & + & x_5 & = & 0 \\ -3x_1 & - & x_2 & + & x_3 & - & & & & = & -1 \\ 6x_1 & + & 2x_2 & - & x_3 & + & 2x_4 & - & 3x_5 & = & 6 \end{array}$$

Question 4. §1.2 #1g *(2 marks)* Determine whether the matrix is in row echelon form, reduced row echelon form, both, or neither.

$$\begin{bmatrix} 1 & -7 & 5 & 5 \\ 0 & 1 & 3 & 2 \end{bmatrix}$$

Question 5. §1.2 #4d *(2 marks)* Suppose that the augmented matrix for a system of linear equations has been reduced by row operations to the given row echelon form. Solve the system.

$$\begin{bmatrix} 1 & -3 & 0 & 0 \\ 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 1 \end{bmatrix}$$