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 #1b *(1 mark)* Determine whether the equation is linear in x_1, x_2, and x_3:

$$x_1 + 3x_2 + x_1x_3 = 2$$

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

$$\begin{aligned} 3z + x &= -4 \\ y + 5z &= 1 \\ 6x + 2z &= 3 \\ -x - y - z &= 4 \end{aligned}$$

Question 3. §1.1 #11b *(2 marks)* Find a system of linear equations correcponding to the given augmented matrix.

$$\begin{bmatrix} 3 & 0 & -2 & 5 \\ 7 & 1 & 4 & -3 \\ 0 & -2 & 1 & 7 \end{bmatrix}$$

Question 3. §1.1 #14c *(2 marks)* Find the augmented matrix for the given system of linear equations

$$\begin{aligned} x_1 + 2x_2 - x_4 + x_5 &= 1 \\ 3x_2 + x_3 - x_5 &= 2 \\ x_3 + 7x_4 &= 1 \end{aligned}$$

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

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

Question 5. §1.2 #4a *(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.

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