Dawson College: **Linear Algebra**: 201-105-DW-C2: Fall 2009

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. *(2 marks)* Is the following a linear equations in the variables x_1, x_2 and x_3, justify.

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

Question 2. *(2 marks)* Find the augmented matrix for the following systems of linear equations.

$$\begin{array}{rcrcrcl} 2x_1 & + & 3x_3 & & & = & 1 \\ 3x_1 & - & 4x_2 & - & 3x_3 & = & 2 \\ -x_1 & - & 2x_2 & & & = & 0 \end{array}$$

Question 3. *(2 marks)* Is the following matrix in reduced row-echelon form, justify.

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

Question 4. *(2 marks)* Is the following matrix in row-echelon form, justify.

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

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

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