Dawson College: **Linear Algebra** (COMPUTER SCIENCE): 201-NYC-05-S9: Fall 2022: **Quiz 2** name: _____

Books, watches, notes or cell phones are **not** allowed. The **only** calculators allowed are the Sharp EL-531**. You **must** show all your work, the correct answer is worth 1 mark the remaining marks are given for the work.

Question 1. *(2 marks)* Determine whether the following statement is true or false. If the statement is false provide a counterexample. If the statement is true provide a proof of the statement.

If the reduced row echelon form of the augmented matrix for a linear system has a row of zeros, then the system must have infinitely many solutions.

Question 2. *(3 marks)* The augmented matrix for a system of linear equations has been reduced by row operations to the given row echelon form. Solve the system.

$$\begin{bmatrix} 1 & 2 & 0 & -5 & 6 \\ 0 & 0 & 1 & -9 & 3 \end{bmatrix}$$

Question 3. *(5 marks)* Determine the values of p for which the system has no solutions, exactly one solution, or infinitely many solutions

$$\begin{array}{rcrcrcl} -x & + & 4y & - & 2z & = & 1 \\ -2x & + & 10y & + & (2p-4)z & = & 6 \\ 3x & - & 11y & + & (p^2+6)z & = & 5p-1 \end{array}$$