**Dawson College**: **Linear Algebra** (SCIENCE): 201-NYC-05-S8: Winter 2024: **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.** *(5 marks)* Find the value(s) of $k$, if any, for which the following system

$$\begin{cases} x- & 3y- & z=2 \\ -2x+(k^2+2)y- & & kz=-2-3k \\ 3x- & 9y+(k^2+k-9)z & =2k+2 \end{cases}$$

has

a. exactly one solutions,

b. infinitely many solutions,

c. no solutions.

**Question 2.***(5 marks)* Show that the reduced row echelon form of $\begin{bmatrix} p & 0 & a \\ b & 0 & 0 \\ q & c & r \end{bmatrix}$ where $abc \neq 0$ is $\begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$.