Dawson College: **Linear Algebra** (SCIENCE): 201-NYC-05-S1: Winter 2024: **Quiz 14** 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. *(4 marks)* Determine whether $H = \{A \mid A \in \mathbb{M}_{n\times n}$ and the RREF of A is $I\}$, is a subspace of $\mathbb{M}_{n\times n}$

Question 2. *(4 marks)* Prove: The span of a nonempty set S of vectors in V is the smallest subspace of V that contains S.

Question 3. *(4 marks)* If $\mathbf{v}_1, \ldots, \mathbf{v}_n$ are linearly dependent nonzero vectors, then at least one vector $\mathbf{v}_k$ is a unique linear combination of $\mathbf{v}_1, \ldots, \mathbf{v}_{k-1}$.