Dawson College: Fall 2019: Linear Algebra (SCIENCE): 201-NYC-05-S5: **Quiz 14**   name: _____

No books, watches, 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.

Question 1.(*4 marks each*) 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. Show all your work!

a. There is a basis for M_{22} consisting of invertible matrices.

b. If A has size $n \times n$ and $I_n, A, A^2, \ldots, A^{n^2}$ are distinct matrices, then $\{I_n, A, A^2, \ldots, A^{n^2}\}$ is a linearly dependent set.

c. There are only three distinct two-dimensional subspaces of P_2.

d. Every linearly independent subset of a vector space V is a basis for V.