Math 225 Quiz 1

Don't forget to write down clearly your **Name**:   and **ID number:**

1. True or False (5 points)   Mark "T" (True) or "F" (False) in front of each statement.

_____   The set of natural numbers $\mathbb{N} = \{0, 1, 2, \dots\}$ is a field.

_____   Every vector space contains a unique zero vector.

_____   The usual Euclidean spaces $\mathbb{R}^3$ has infinitely many subspaces.

_____   If v is a nonzero vector, the set $\{v\}$ is linearly dependent.

_____   If S is a subset of a vector space V, then $\mathrm{span}(S)$ is a subspace of V.

2. Subspaces (5 points).   Find a spanning set for the set of 2×2 lower triangular matrices, that is, the set of matrices of the form

$$\left\{ \begin{pmatrix} a & 0 \\ b & c \end{pmatrix} \middle| a, b, c \in \mathbb{C} \right\}.$$