Quiz 1
MA3.101: Linear Algebra (Spring 2019)
Time : 20 Mins
Total Marks: 15

January 23, 2019

Questions

1. Let $\mathbf{v}_1$, $\mathbf{v}_2$ and $\mathbf{v}_3$ be 3 vectors in $\mathbb{R}^3$. $\mathbf{v}_3$ is not a linear combination of $\mathbf{v}_1$ and $\mathbf{v}_2$. Is $\{\mathbf{v}_1, \mathbf{v}_2, \mathbf{v}_3\}$ linearly independent? Please support your answer with proper reasoning.

2. The **column space** of a matrix $A \in \mathbb{R}^{m \times n}$ is the set of vectors in $\mathbb{R}^m$ spanned by the columns of matrix A. Is column space of A a subspace? Please support your answer with proper reasoning.

3. Let S denote the set of all possible Fibonacci sequences, i.e., $S = \{(x_1, x_2, ...) : x_i \in \mathbb{R}, x_j = x_{j-1} + x_{j-2}, \forall j \geq 3\}$. Is S a vector space? Please support your answer with proper reasoning.