Name: ___________ **QUIZ # 01** **Roll #: _____**

Q.1: Let $V = R^2$ & If $u = (u_1, u_2)$ and v = $(v_1\ , v_2\ )$, then u + v = $(u_1 + v_1\ , u_2 + v_2)$ and if k is any real number, then ku = $(ku_1, 0)$. Let u = (2, 4), v = (−3, 5), and k = 7. Check all 10 axioms and decide whether V is a vector space or not?

Q.2: Determine whether given type of matrix is a subspace of M_{22}. The set U consisting of all matrices of the form

$$\begin{bmatrix} x & 0 \\ 2x & y \end{bmatrix}$$

Q.3: Consider the vectors **u = (1, 2, −1)** and **v = (6, 4, 2)** in $\boldsymbol{R^3}$. Show that w = (9, 2, 7) is a linear combination of u and v

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Name: ___________ **QUIZ # 01** **Roll #: _____**

Q.1: Determine whether the vectors v_1 = (1, −2, 3), v_2 = (5, 6, −1), v_3 = (3, 2, 1) are linearly independent or linearly dependent in $\boldsymbol{R^3}$.

Q.2: Use the Subspace Test to determine which of the sets are subspaces of M_{22}. All matrices of the form

$$\begin{bmatrix} a & 0 \\ b & 0 \end{bmatrix}$$

Q.3: Find bases for the null space and row space of A. Find dimension of A as well.

$$A = \begin{bmatrix} 1 & -1 & 3 \\ 5 & -4 & -4 \\ 7 & -6 & 2 \end{bmatrix}$$

Name: ___________ **QUIZ # 01** **Roll #: _____**

Q.1: Determine whether the vectors v_1 = (1, 2, 2, −1), v_2 = (4, 9, 9, −4), v_3 = (5, 8, 9, −5) in $\boldsymbol{R^4}$ are linearly dependent or linearly independent

Q.2: Use the Subspace Test to determine which of the sets are subspaces of M_{22}. All matrices of the form

$$\begin{bmatrix} a & 1 \\ b & 1 \end{bmatrix}$$

Q.3: Find bases for the null space and row space of A. Find dimension of A as well.

$$A = \begin{bmatrix} 2 & 0 & -1 \\ 4 & 0 & -2 \\ 0 & 0 & 0 \end{bmatrix}$$