King Fahd University of Petroleum and Minerals
MATH-302
Quiz 1

Name:- **ID:-** **Sec.:01**

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(1) Let $\mathbf{S} = \{\langle x, y, z\rangle | x + y + 3z = 0\}$.

(a) Show that **S** is a subspace of R^4.

(b) Find a basis and the dimension of **S.**

(2) (a) When is a **non-homogenous** system $AX = B$ is **inconsistent**?

(b) Use Gauss-Jordan Elimination method to solve the given system or show that no solution exists.

$$x_1 + 2x_2 - 4x_3 = 9$$
$$5x_1 - x_2 + 2x_3 = 1$$

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Name:- **ID:-** **Sec.:05**

(1) Let $\mathbf{S} = \{\langle x, y, z\rangle | x + y = 5z\}$.

(c) Show that **S** is a subspace of R^4.

(d) Find a basis the dimension of **S.**

(2) (a) When is a **homogenous** system $AX = B$ has **unique solution**?

(b) Use Gauss-Jordan Elimination method to solve the given system or show that no solution exists.

$$x_1 - x_2 - x_3 = 8$$
$$x_1 - x_2 + x_3 = 3$$
$$-x_1 + x_2 + x_3 = 4$$