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

Name:- **ID:-** **Sec.:04**

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

(a) Show that **S** is a subspace of R^5

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

(c) Write $\langle -13, 2, 1, -10, -2\rangle$ as a linear combination of the basis you found in **(b)**.

(2) Use Gaussian Elimination method to solve the given system or show that no solution exists.

$$\begin{aligned} x_1 - 2x_2 + 3x_3 + 2x_4 + x_5 &= 10 \\ 2x_1 - 4x_2 + 8x_3 + 3x_4 + 10x_5 &= 7 \\ 3x_1 - 6x_2 + 10x_3 + 6x_4 + 5x_5 &= 27 \end{aligned}$$