Assignment 11

***Abstract*—This document contains Solution of Problem.**

Download latex-tikz codes from

https://github.com/ayushkesh/Matrix−Theory−EE5609/tree/master/A11

1 Problem:

Let **V** be the vector space of all function f form **R** to **R**. Is $f\left(x^2\right) = f(x)^2$.

2 Solution

For each of the function to be a subspace, it must be closed with respect to addition and scalar multiplication in **V** defined as, for $f\ g \in \mathbf{W}$
Then,

$$(f+g)(x^2) = f(x^2) + g(x^2) \tag{2.0.1}$$
$$= f(x)^2 + g(x)^2 \tag{2.0.2}$$
$$\neq (f+g)(x)^2 \tag{2.0.3}$$

Since **W** is not closed with respect to addition. So It is not a subspace of **V**.