Matrix theory Assignment 10

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***Abstract*—This document contains the concept of vector space V over a field F.**

Download all python codes from

```
https://github.com/shivangi-975/EE5609-Matrix_Theory/tree/master/Assignment10/Codes
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Download latex-tikz codes from

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https://github.com/shivangi-975/EE5609-Matrix_Theory/blob/master/Assignment10/Assignment_10.tex
```

1 Problem

If $\mathbf{V}$ is a vector space over field $\mathbf{F}$,verify that:

$$(\alpha_1 + \alpha_2) + (\alpha_3 + \alpha_4) = [\alpha_2 + (\alpha_3 + \alpha_1)] + \alpha_4$$

2 Solution

Using property of commutativity of (+) in $\mathbf{V}$

$$(\alpha_1 + \alpha_2) + (\alpha_3 + \alpha_4) = (\alpha_2 + \alpha_1) + (\alpha_3 + \alpha_4) \tag{2.0.1}$$

Using property of associativity of (+) in $\mathbf{V}$

$$(\alpha_2 + \alpha_1) + (\alpha_3 + \alpha_4) = \alpha_2 + [\alpha_1 + (\alpha_3 + \alpha_4)] \tag{2.0.2}$$

Using property of commutativity of (+) in $\mathbf{V}$

$$\alpha_2 + [\alpha_1 + (\alpha_3 + \alpha_4)] = \alpha_2 + (\alpha_3 + \alpha_1) + \alpha_4 \tag{2.0.3}$$

Using property of associativity of (+) in $\mathbf{V}$

$$\alpha_2 + (\alpha_3 + \alpha_1) + \alpha_4 = [\alpha_2 + (\alpha_3 + \alpha_1] + \alpha_4 \tag{2.0.4}$$