Operations in the Field R^n

As in any field, we can define the mathematical operations of the field R^n

These **operations** are:

- Addition
- Multiplication

We also need to define the **zero** and **one** element in the field.

- Zero element : $\vec{x} = \begin{bmatrix} 0 \\ 0 \\ 0 \\ : \\ 0 \end{bmatrix}$
- One element: $\vec{x} = \begin{bmatrix} 1 \\ 1 \\ 1 \\ : \\ 1 \end{bmatrix}$

The above operations satisfy the **field axioms**:

- Associativity
- Commutativity
- Distributivity
- Identity (defining *zero addition* and *multiplication by one*)
- Inverse (defining *Subtraction-Additive Inverse* and *Division-Multiplicative Inverse*)

In this lesson we will focus on **vector addition** and **scalar by vector multiplication**.