

0.1 Vector Space

A vector space is an algebraic structure that consists of a set of vectors and two operations defined on these vectors: vector addition and scalar multiplication. The elements of the vector space are called vectors, which can be added together and multiplied by numbers, called scalars. The operations of vector addition and scalar multiplication must satisfy a set of axioms, which ensure that the resulting vectors remain within the vector space. It will be helpful to describe a vector space by first explaining the concept of a set and a group.