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In mathematics, a topological vector space (also called a linear topological space and commonly abbreviated TVS or t.v.s.) is one of the basic structures investigated in functional analysis.. A topological vector space is a vector space (an algebraic structure) which is also a topological space, the latter thereby admitting a notion of continuity. More specifically, its topological space has a ...

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respect to their standard vector space and topological structures. If V is an n -dimensional real or complex vector space, then V is isomorphic to \mathbb{R}^n or \mathbb{C}^n as a vector space, as appropriate. Let T be such an isomorphism, which is to say a one-to-one linear mapping from \mathbb{R}^n or \mathbb{C}^n onto V . We can also define a topology on V so that T is a homeomorphism, in which case V becomes a topological vector space isomorphic to \mathbb{R}^n or \mathbb{C}^n .

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E.2.2 Topological Vector Spaces A topological vector space is a vector space that has a topology such that the operations of vector addition and scalar multiplication are continuous. In order to define this precisely, the reader should recall the definition of the topology on the product space $X \times X$ as given in Section A.6. Definition E.12 ...

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1.1 Topological spaces 1.1.1 The notion of topological space The topology on a set X is usually defined by specifying its open subsets of X . However, in dealing with topological vector spaces,

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