Why

In some sense, $\mathbf{R}^n$ is the only finite-dimensional vector space. In what sense?

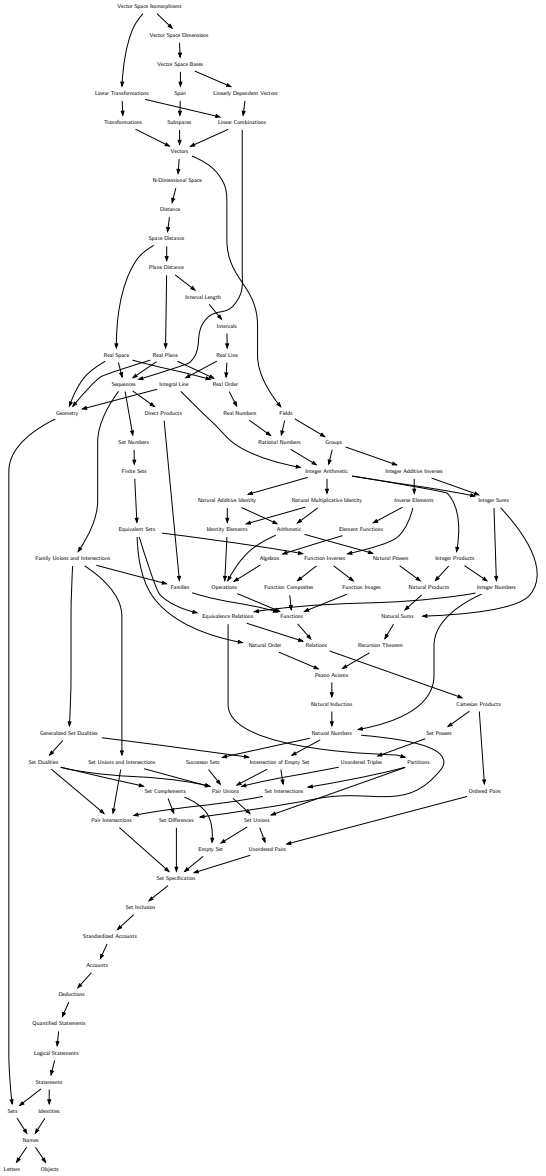
Definition

An *isomorphism* is an invertible linear transformation between two vector spaces. Two vector spaces are *isomorphic* if there exists and isomorphism between them.

Key Result

Prop. 1. *Two finite-dimensional vector spaces are isomorphic if and only if they have the same dimension.*

Corollary 1. *Two finite-dimensional vector spaces are isomorphic if and only if they have the same dimension.*


Vector Space Isomorphisms
Vector Space Dimensions
Vector Space Bases
Linear Transformations
Span
Linearly Dependent Vectors
Transformations
Subspaces
Linear Combinations
Vectors
N-Dimensional Space
Distance
Space Distance
Plane Distance
Interval Length
Intervals
Real Space
Real Plane
Real Line
Sequences
Integral Line
Real Order
Geometry
Direct Products
Real Numbers
Fields
Set Numbers
Rational Numbers
Groups
Finite Sets
Integer Arithmetic
Integer Additive Inverses
Natural Additive Identity
Natural Multiplicative Identity
Inverse Elements
Integer Sums
Equivalent Sets
Identity Elements
Arithmetic
Element Functions
Family Unions and Intersections
Algebras
Function Inverses
Natural Powers
Integer Products
Families
Operations
Function Composites
Function Images
Natural Products
Integer Numbers
Equivalence Relations
Functions
Natural Sums
Natural Order
Relations
Recursion Theorem
Peano Axioms
Natural Induction
Cartesian Products
Generalized Set Dualities
Natural Numbers
Set Power
Set Dualities
Set Unions and Intersections
Successor Sets
Intersection of Empty Set
Unordered Triples
Partitions
Set Complements
Pair Unions
Set Intersections
Ordered Pairs
Pair Intersections
Set Differences
Set Unions
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects