Why

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

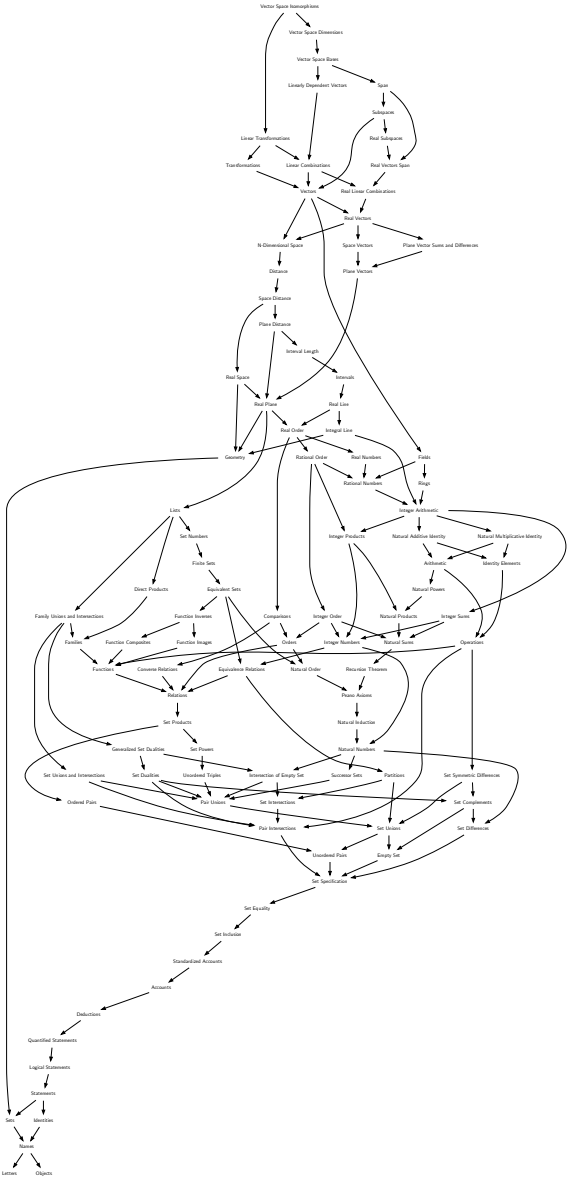
Definition

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 Isomorphism
Vector Space Dimension
Vector Space Basis
Linearly Dependent Vectors
Span
Subspace
Linear Transformation
Real Subspace
Transformation
Linear Combination
Real Vector Span
Vector
Real Linear Combination
Real Vector
N-Dimensional Space
Space Vector
Plane Vector Sums and Differences
Distance
Plane Vector
Space Distance
Plane Distance
Interval Length
Real Space
Intervals
Real Plane
Real Line
Real Order
Integral Line
Geometry
Rational Order
Real Numbers
Fields
Rational Number
Rings
Lists
Integer Arithmetic
Set Numbers
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Finite Sets
Arithmetic
Identity Elements
Direct Products
Equivalent Sets
Natural Powers
Family Unions and Intersections
Function Inverse
Comparison
Integer Order
Natural Products
Integer Sums
Families
Function Composites
Function Image
Orders
Integer Numbers
Natural Sums
Quantifiers
Functions
Converse Relations
Equivalence Relations
Natural Order
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions and Intersections
Set Dualities
Unordered Triples
Intersection of Empty Set
Successor Sets
Partitions
Set Symmetric Differences
Ordered Pairs
Pair Unions
Set Intersections
Set Complements
Pair Intersections
Set Unions
Set Differences
Unordered Pairs
Empty Set
Set Specification
Set Equality
Set Inclusion
Standardized Accounts
Accounts
Deduction
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects