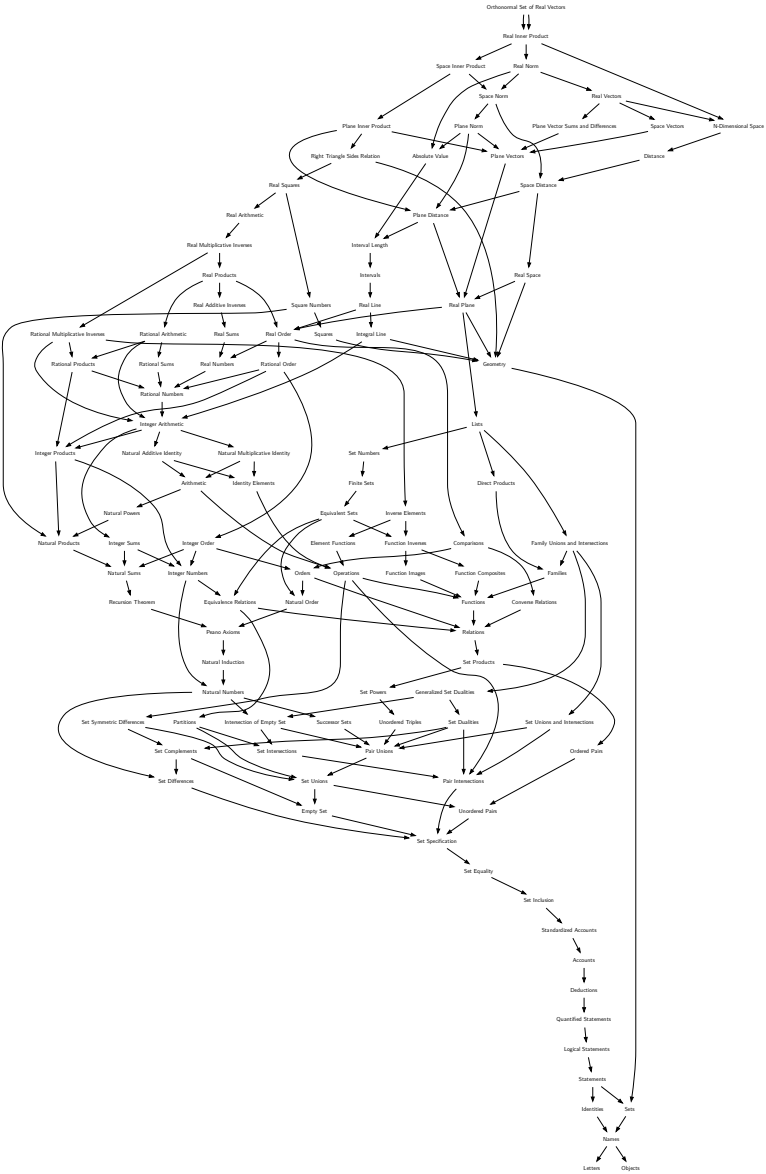
Definition

A vector is *normalized* if its norm is 1. A set of vectors $\{u_1, \ldots, u_k\}$ *orthogonal* if $u_i^\top u_j = 0$ whenever $i \neq j$. A set of vectors is *orthonormal* if the set is orthogonal and each vector is normalized.

Basis

An orthonormal set of vectors is also an independent set. In other words, orthonormality is stronger than independence.


Orthonormal Set of Real Vectors
Real Inner Product
Space Inner Product
Real Norm
Space Norm
Real Vectors
Plane Inner Product
Plane Norm
Plane Vector Sums and Differences
Space Vectors
N-Dimensional Space
Right Triangle Sides Relation
Absolute Value
Plane Vectors
Distance
Real Squares
Space Distance
Real Arithmetic
Plane Distance
Real Multiplicative Inverses
Interval Length
Real Products
Intervals
Real Space
Real Additive Inverses
Square Numbers
Real Line
Real Plane
Rational Multiplicative Inverses
Rational Arithmetic
Real Sums
Real Order
Squares
Integral Line
Geometry
Rational Products
Rational Sums
Real Numbers
Rational Order
Rational Numbers
Integer Arithmetic
Lists
Integer Products
Natural Additive Identity
Natural Multiplicative Identity
Set Numbers
Arithmetic
Identity Elements
Finite Sets
Direct Products
Natural Powers
Equivalent Sets
Inverse Elements
Natural Products
Integer Sums
Integer Order
Element Functions
Function Inverses
Comparisons
Family Unions and Intersections
Natural Sums
Integer Numbers
Orders
Operations
Function Images
Function Composites
Families
Recursion Theorem
Equivalence Relations
Natural Order
Functions
Converse Relations
Peano Axioms
Relations
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Partitions
Intersection of Empty Set
Successor Sets
Unordered Triples
Set Dualities
Set Unions and Intersections
Set Complements
Set Intersections
Pair Unions
Ordered Pairs
Set Differences
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Skolemized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects