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