Why

[1]

Definition

An *orthonormal* (or *orthogonal*) matrix is a matrix whose columns are an orthonormal family of vectors.

Some authors call these *real orthogonal* or *unitary* matrices.

Notation

Let $A \in \mathbf{F}^{m \times n}$. Something something

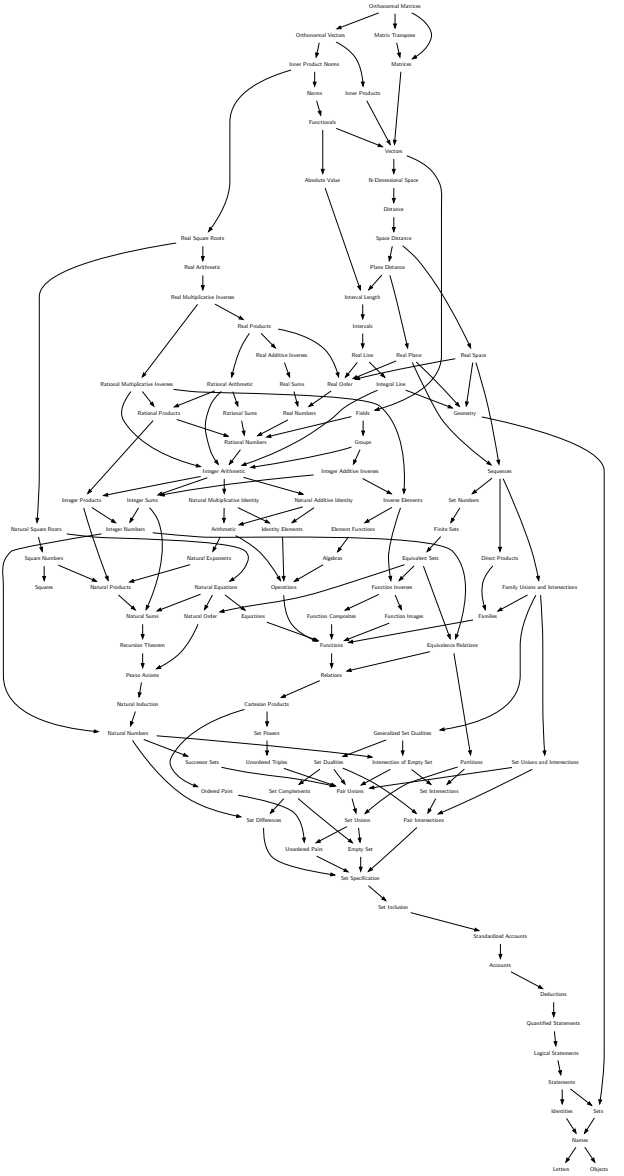
$$AA^\top = I.$$

Characterizations

Proposition 1. *A matrix is orthonormal if and only if its transpose product with the matrix is the identity.*

Proposition 2. *A matrix is orthonormal if and only if its transpose is orthonormal.*

[1] Future editions will include.


Orthonormal Matrices
Orthonormal Vectors
Matrix Transpose
Inner Product Norms
Matrices
Norms
Inner Products
Functionals
Vectors
Absolute Value
N-Dimensional Space
Distance
Real Square Roots
Space Distance
Real Arithmetic
Plane Distance
Real Multiplicative Inverses
Interval Length
Real Products
Intervals
Real Additive Inverses
Real Line
Real Plane
Real Space
Rational Multiplicative Inverses
Rational Arithmetic
Real Sums
Real Order
Integral Line
Geometry
Rational Products
Rational Sums
Real Numbers
Fields
Rational Numbers
Groups
Integer Arithmetic
Integer Additive Inverses
Sequences
Integer Products
Integer Sums
Natural Multiplicative Identity
Natural Additive Identity
Inverse Elements
Set Numbers
Natural Square Roots
Integer Numbers
Arithmetic
Identity Elements
Element Functions
Finite Sets
Square Numbers
Natural Exponents
Algebras
Equivalent Sets
Direct Products
Squares
Natural Products
Natural Equations
Operations
Function Inverses
Family Unions and Intersections
Natural Sums
Natural Order
Equations
Function Composites
Function Images
Families
Recursion Theorem
Functions
Equivalence Relations
Peano Axioms
Relations
Natural Induction
Cartesian Products
Natural Numbers
Set Powers
Generalized Set Dualities
Successor Sets
Unordered Triples
Set Dualities
Intersection of Empty Set
Partitions
Set Unions and Intersections
Ordered Pairs
Set Complements
Pair Unions
Set Intersections
Set Differences
Set Unions
Pair Intersections
Unordered Pairs
Empty Set
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects