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

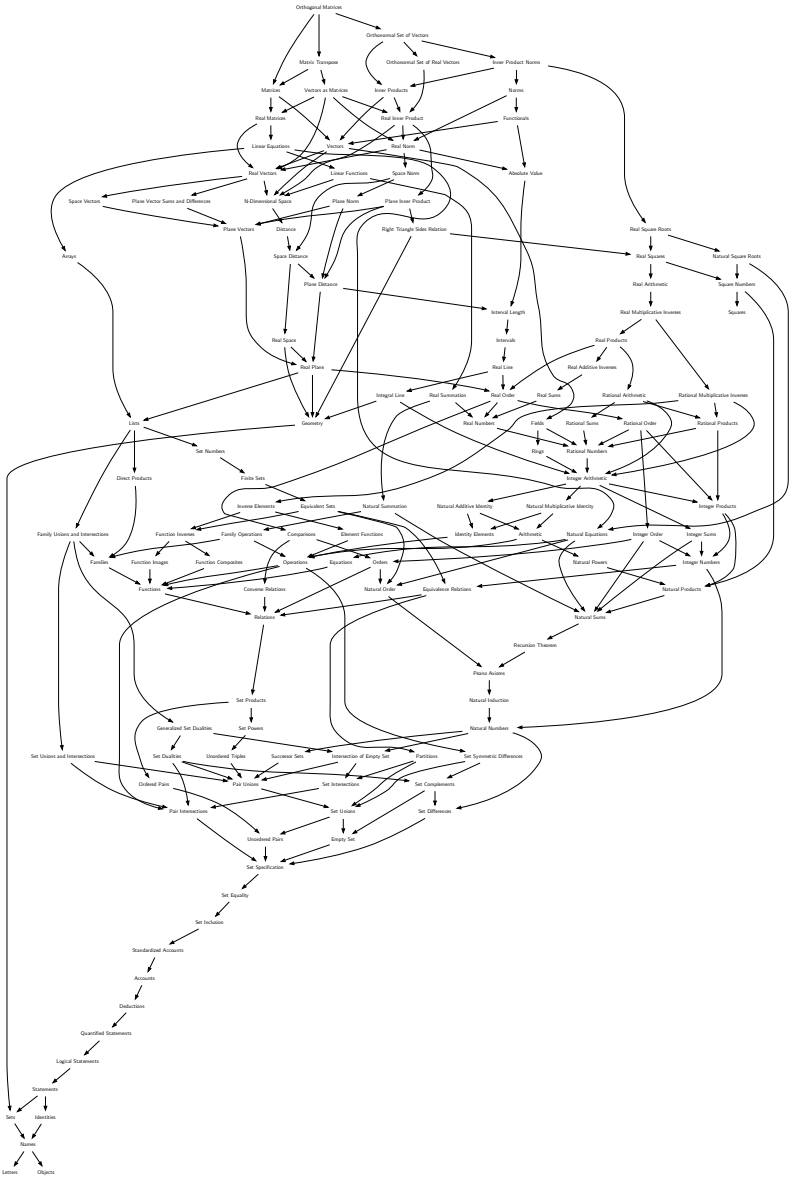
$$AA^\top = I.$$

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.


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