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

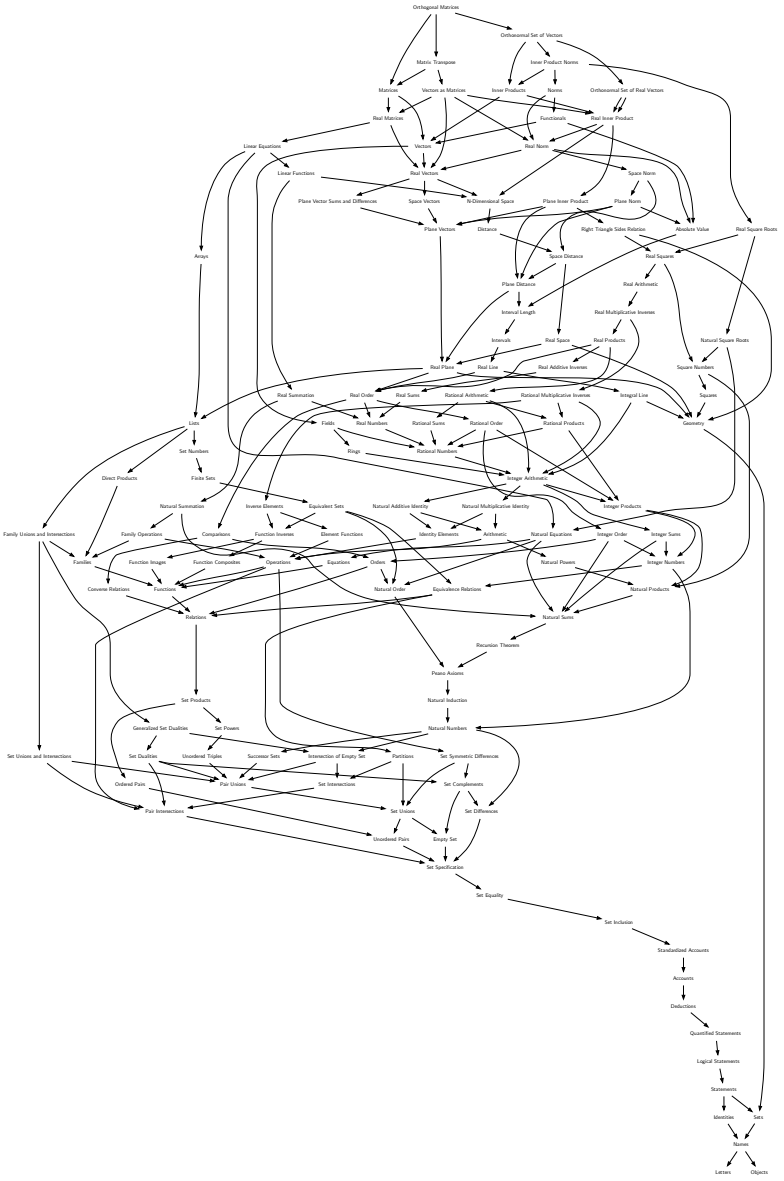
$$AA^\top = I.$$

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