Why

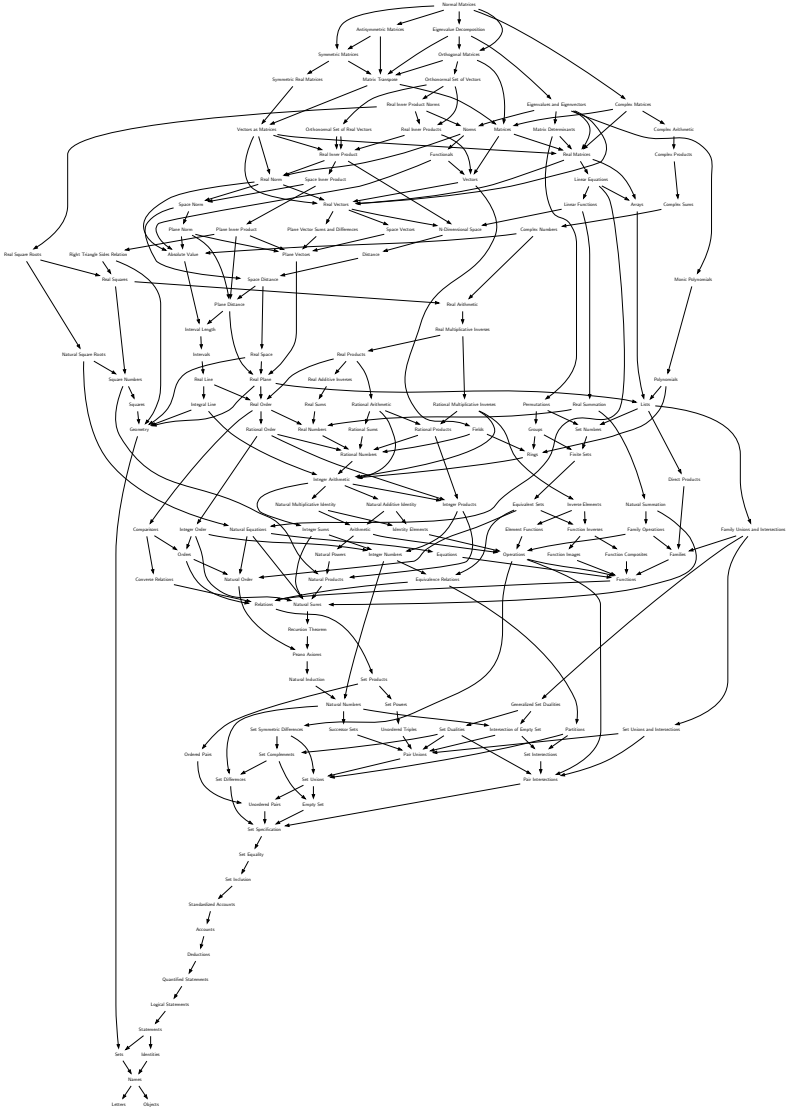
Which matrices have orthogonal eigenvectors?

Definition

A *normal matrix* is a matrix which has orthogonal eigenvectors. It commutes with its (conjugate) transpose.

Notation

If $A \in \mathbf{C}^{d \times d}$ is normal then there exists an orthonormal matrix $Q \in \mathbf{C}^{d \times d}$ and a diagonal matrix $\Lambda \in \mathbf{C}^{d \times d}$ so that $A = Q \Lambda Q^{\top}$.


Normal Matrices
Antisymmetric Matrices
Eigenvalue Decomposition
Symmetric Matrices
Orthogonal Matrices
Symmetric Real Matrices
Matrix Transpose
Orthonormal Set of Vectors
Real Inner Product Norms
Eigenvalues and Eigenvectors
Complex Matrices
Vectors as Matrices
Orthonormal Set of Real Vectors
Real Inner Products
Norms
Matrices
Matrix Determinants
Complex Arithmetic
Real Inner Product
Functionals
Real Matrices
Complex Products
Real Norms
Space Inner Product
Vectors
Linear Equations
Space Norms
Real Vectors
Linear Functions
Arrays
Complex Sums
Plane Norms
Plane Inner Product
Plane Vector Sums and Differences
Space Vectors
N Dimensional Space
Complex Numbers
Real Square Roots
Right Triangle Sides Relations
Absolute Value
Plane Vectors
Distance
Space Distance
Monic Polynomials
Real Squares
Plane Distance
Real Arithmetic
Interval Length
Real Multiplicative Inverses
Natural Square Roots
Intervals
Real Spaces
Real Products
Square Numbers
Real Plane
Real Additive Inverses
Polynomials
Real Line
Real Order
Rational Arithmetic
Rational Multiplicative Inverses
Permutations
Real Summation
Lists
Integral Line
Squares
Geometry
Real Sums
Real Numbers
Rational Sums
Rational Products
Fields
Groups
Set Numbers
Rational Order
Rational Numbers
Rings
Finite Sets
Integer Arithmetic
Direct Products
Natural Multiplicative Identity
Natural Additive Identity
Integer Products
Equivalent Sets
Inverse Elements
Natural Summation
Comparisons
Integer Order
Natural Equations
Integer Sums
Arithmetic
Identity Elements
Element Functions
Function Inverses
Family Operations
Family Unions and Intersections
Orders
Natural Powers
Integer Numbers
Equations
Operations
Function Images
Function Composites
Families
Converse Relations
Natural Order
Natural Products
Equivalence Relations
Functions
Relations
Natural Sums
Recursion Theorem
Peano Axioms
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Isolation 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 Equality
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects