Why

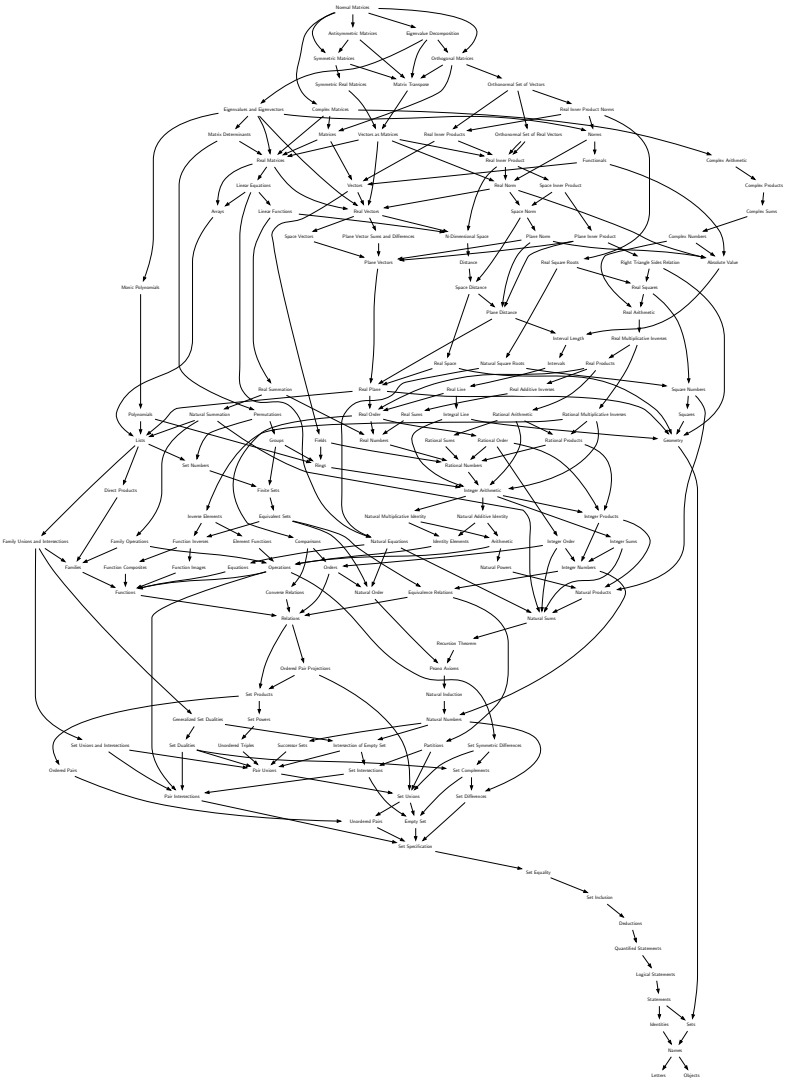
Which matrices have orthogonal eigenvectors?

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
Eigenvalues and Eigenvectors
Complex Matrices
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Vectors as Matrices
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Permutations
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Rational Arithmetic
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Rational Numbers
Direct Products
Finite Sets
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Inverse Elements
Equivalent Sets
Natural Multiplication Identity
Natural Additive Identity
Integer Products
Family Unions and Intersections
Family Operations
Function Inverses
Element Functions
Comparison
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Arithmetic
Integer Order
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Families
Function Composites
Function Images
Equations
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Natural Powers
Integer Numbers
Functions
Converse Relations
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Equivalence Relations
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Recursion Theorems
Peano Axioms
Ordered Pair Projections
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions and Intersections
Set Dualities
Unordered Tuples
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
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects