Why

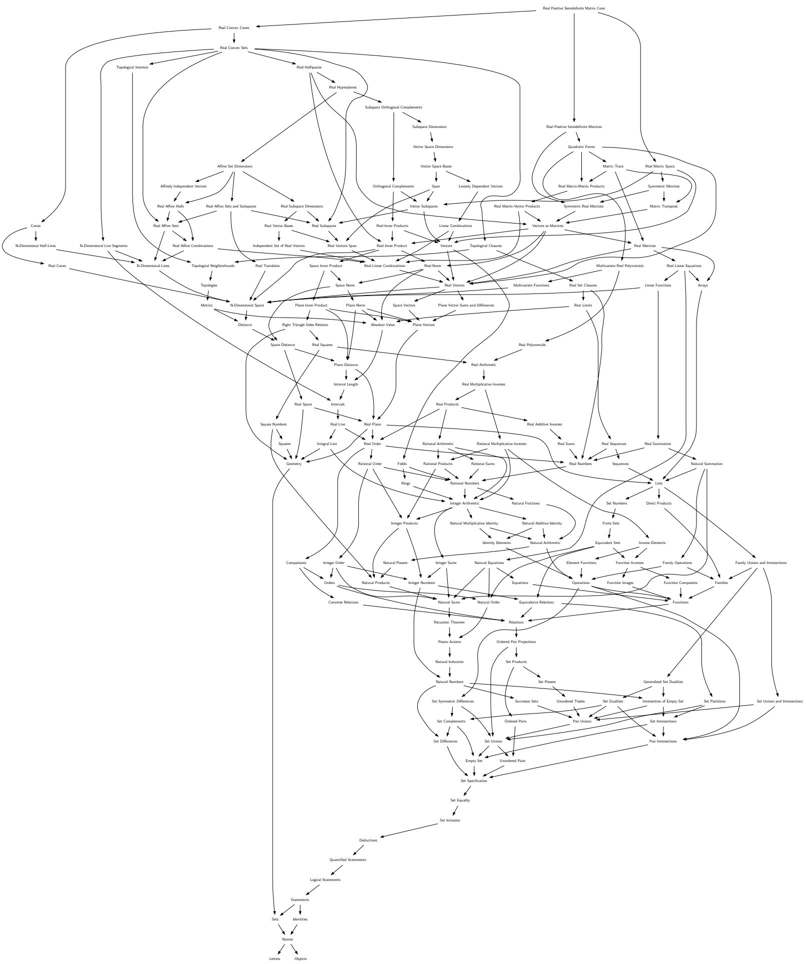
The set of positive semidefinite matrices turns out to be a cone in the vector space of $n \times n$ matrices.

Main result

Proposition 1. *$\mathbf{S}_+^d$ is a convex, pointed, closed cone with interior $\mathbf{S}_{++}^d$ relative to $\mathbf{S}^d$.*[1]

The cone of positive definite matrices is open.

[1] Future editions will contain a proof.


Real Positive Semidefinite Matrix Cone
Real Convex Cones
Real Convex Sets
Topological Interiors
Real Halfspaces
Real Hyperplanes
Subspace Orthogonal Complements
Subspace Dimensions
Real Positive Semidefinite Matrices
Vector Space Dimensions
Quadratic Forms
Vector Space Bases
Affine Set Dimensions
Matrix Trace
Real Matrix Space
Affinely Independent Vectors
Orthogonal Complements
Span
Linearly Dependent Vectors
Real Matrix-Matrix Products
Symmetric Matrices
Real Affine Hulls
Real Affine Sets and Subspaces
Real Subspace Dimensions
Vector Subspaces
Real Matrix-Vector Products
Symmetric Real Matrices
Matrix Transpose
Cones
Real Affine Sets
Real Vector Bases
Real Subspaces
Real Inner Products
Linear Combinations
Vectors as Matrices
N-Dimensional Half-Lines
N-Dimensional Line Segments
Real Affine Combinations
Independent Set of Real Vectors
Real Vectors Span
Real Inner Product
Vectors
Topological Closures
Real Matrices
Real Cones
N-Dimensional Lines
Topological Neighborhoods
Real Translates
Space Inner Product
Real Linear Combinations
Real Norm
Multivariate Real Polynomials
Real Linear Equations
Topologies
Space Norm
Real Vectors
Multivariate Functions
Real Set Closures
Linear Functions
Arrays
Metrics
N-Dimensional Space
Plane Inner Product
Plane Norm
Space Vectors
Plane Vector Sums and Differences
Real Limits
Distance
Right Triangle Sides Relation
Absolute Value
Plane Vectors
Space Distance
Real Squares
Real Polynomials
Plane Distance
Real Arithmetic
Interval Length
Real Multiplicative Inverses
Real Space
Intervals
Real Products
Square Numbers
Real Line
Real Plane
Real Additive Inverses
Squares
Integral Line
Real Order
Rational Arithmetic
Rational Multiplicative Inverses
Real Sums
Real Sequences
Real Summation
Geometry
Rational Order
Fields
Rational Products
Rational Sums
Real Numbers
Sequences
Natural Summation
Rings
Rational Numbers
Lists
Integer Arithmetic
Natural Fractions
Set Numbers
Direct Products
Integer Products
Natural Multiplicative Identity
Natural Additive Identity
Finite Sets
Identity Elements
Natural Arithmetic
Equivalent Sets
Inverse Elements
Comparisons
Integer Order
Natural Powers
Integer Sums
Natural Equations
Element Functions
Function Inverses
Family Operations
Family Unions and Intersections
Orders
Natural Products
Integer Numbers
Equations
Operations
Function Images
Function Composites
Families
Converse Relations
Natural Sums
Natural Order
Equivalence Relations
Functions
Recursion Theorem
Relations
Peano Axioms
Ordered Pair Projections
Natural Induction
Set Products
Natural Numbers
Set Powers
Generalized Set Dualities
Set Symmetric Differences
Successor Sets
Unordered Triples
Set Dualities
Intersection of Empty Set
Set Partitions
Set Unions and Intersections
Set Complements
Ordered Pairs
Pair Unions
Set Intersections
Set Differences
Set Unions
Pair Intersections
Empty Set
Unordered Pairs
Set Specification
Set Equality
Set Inclusion
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects