Definition

A subset $S \subset \mathbf{S}_{++}^n$ of the cone of positive semidefinite matrices is a *spectrahedron* if there exists an affine subset $M \subset \mathbf{S}_{++}^n$ so that

$$S = \mathbf{S}_{++}^n \cap M$$

Real Spectrahedra

Cones

N-Dimensional Half-Lines

N-Dimensional Lines · Real Cones

N-Dimensional Space

Distance

Space Distance

Plane Distance

Interval Length

Intervals · Real Space

Real Line · Real Plane

Integral Line · Real Order · Geometry

Real Numbers · Rational Order · Lists

Rational Numbers · Set Numbers · Direct Products

Integer Arithmetic · Natural Fractions · Finite Sets

Natural Multiplicative Identity · Natural Additive Identity · Integer Products · Equivalent Sets

Identity Elements · Natural Arithmetic · Function Inverses · Family Unions and Intersections

Natural Powers · Integer Sums · Integer Order · Comparisons · Function Images · Function Composites · Families

Operations · Natural Products · Integer Numbers · Orders · Functions · Natural Order

Natural Sums · Equivalence Relations · Converse Relations

Recursion Theorem · Relations

Peano Axioms · Ordered Pair Projections

Natural Induction · Set Products

Natural Numbers · Set Powers · Generalized Set Dualities

Set Symmetric Differences · Partitions · Successor Sets · Intersection of Empty Set · Unordered Triples · Set Dualities · Set Unions and Intersections

Set Complements · Set Intersections · Pair Unions · Ordered Pairs

Set Difference · Pair Intersections

Empty Set · Unordered Pairs

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities · Sets

Names

Letters · Objects