Why

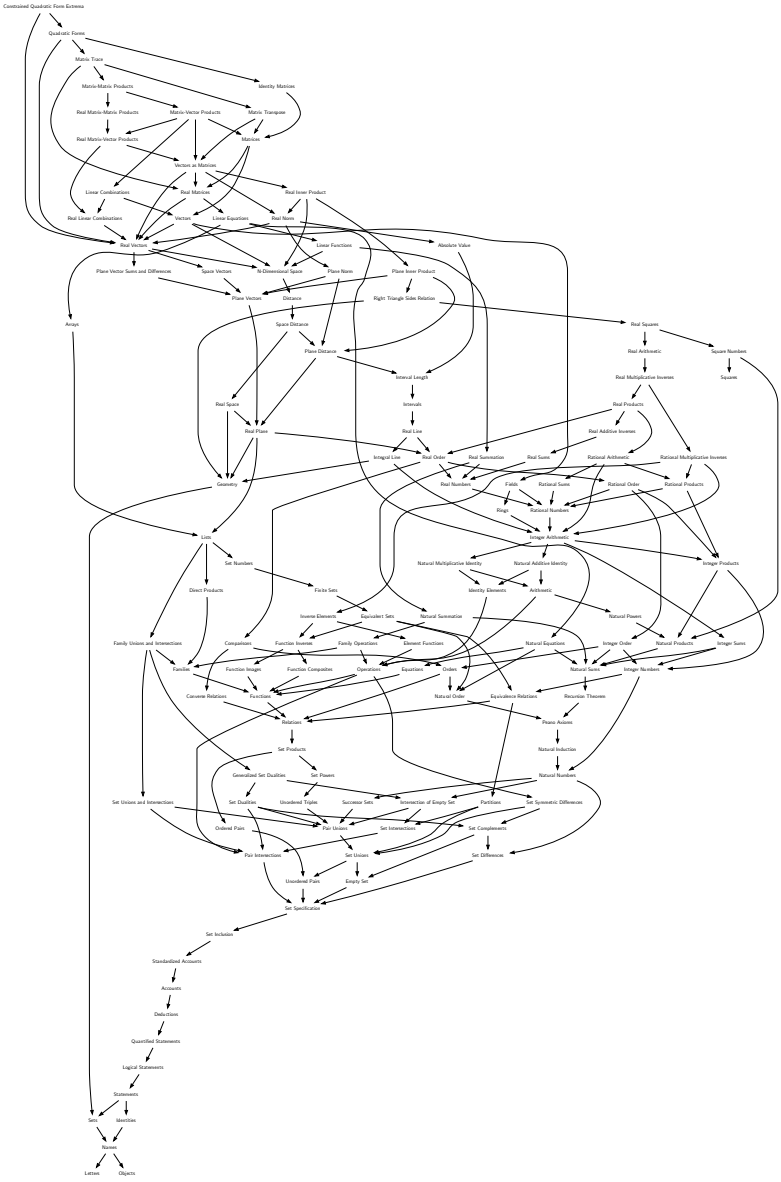
1

Result

Proposition 1. *A necessary condition for a maximizer of* $x^T Ax$ *subject to* $x \in \mathbf{R}^n$ *and* $x^T x = 1$ *is that* $Ax = \lambda x$ *where* λ *is the Lagrange multiplier...*[2]

[1] Future editions will expand. Discussion will likely include eigenvalues.

[2] Future editions will complete, and include references to lagrange multiplier, gradient, quadratic form, necessary conditions, etc.


Constrained Quadratic Form Extrema
Quadratic Forms
Matrix Trace
Identity Matrices
Matrix-Matrix Products
Real Matrix-Matrix Products
Matrix-Vector Products
Matrix Transpose
Real Matrix-Vector Products
Matrices
Vectors as Matrices
Linear Combinations
Real Matrices
Real Inner Product
Real Linear Combinations
Vectors
Linear Equations
Real Norm
Real Vectors
Linear Functions
Absolute Value
Plane Vector Sums and Differences
Space Vectors
N-Dimensional Space
Plane Norm
Plane Inner Product
Plane Vectors
Distance
Right Triangle Sides Relation
Arrays
Space Distance
Plane Distance
Interval Length
Real Squares
Real Arithmetic
Square Numbers
Real Multiplicative Inverses
Squares
Intervals
Real Products
Real Space
Real Plane
Real Line
Real Additive Inverses
Integral Line
Real Order
Real Summation
Real Sums
Rational Arithmetic
Rational Multiplicative Inverses
Geometry
Real Numbers
Fields
Rational Sums
Rational Order
Rational Products
Rings
Rational Numbers
Integer Arithmetic
Sets
Set Numbers
Natural Multiplicative Identity
Natural Additive Identity
Integer Products
Direct Products
Finite Sets
Identity Elements
Arithmetic
Inverse Elements
Equivalent Sets
Natural Summation
Natural Powers
Family Unions and Intersections
Comparison
Function Inverses
Family Operations
Element Functions
Natural Equations
Integer Order
Natural Products
Integer Sums
Families
Function Images
Function Composites
Operations
Equations
Order
Natural Sets
Integer Numbers
Converse Relations
Functions
Natural Order
Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Generalized Set Dualities
Set Union 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 Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Sets
Identities
Names
Letters
Objects