Why

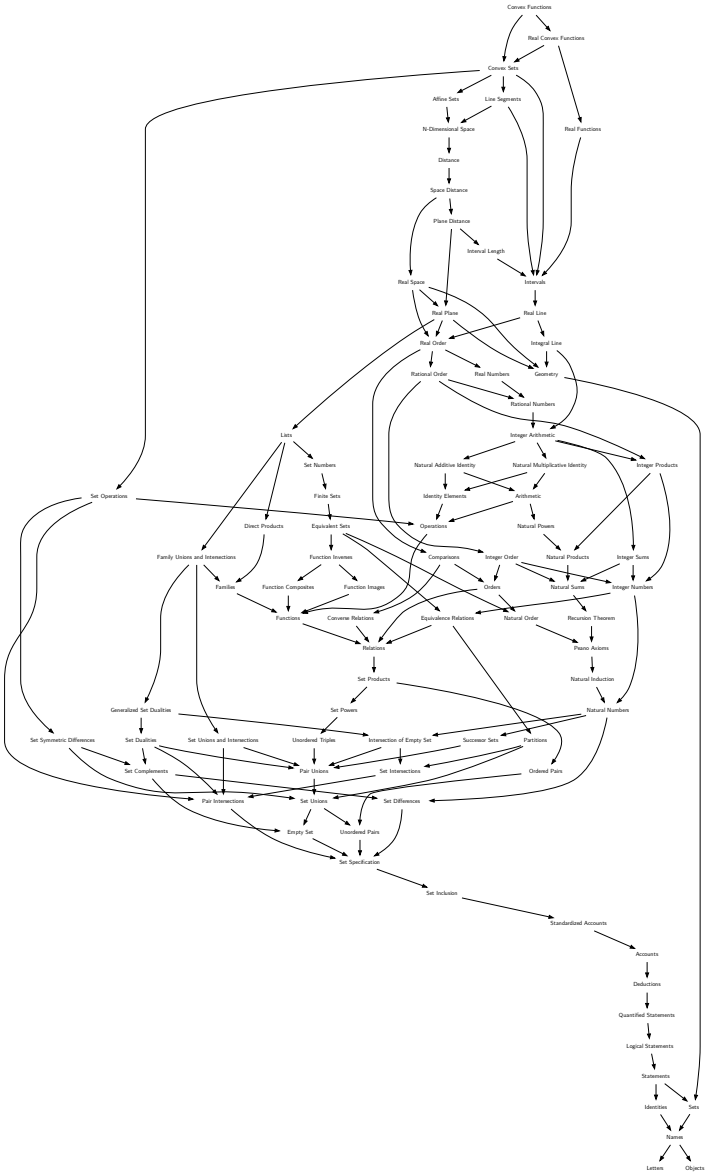
We generalize convex functions to $\mathbf{R}^n$.

Definition

Let A be a convex subset of $\mathbf{R}^n$. The function $f : A \to \mathbf{R}$ is *convex* if for any $a, b \in A$ and $t \in [0, 1]$,

$$f(ta + (1 - t)b) \leq tf(a) + (1 - t)f(b).$$

It is *concave* if $-f$ is convex.


Convex Functions
Real Convex Functions
Convex Sets
Affine Sets
Line Segments
N-Dimensional Space
Real Functions
Distance
Space Distance
Plane Distance
Interval Length
Intervals
Real Space
Real Plane
Real Line
Real Order
Integral Line
Rational Order
Real Numbers
Geometry
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Integer Arithmetic
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Set Numbers
Natural Additive Identity
Natural Multiplicative Identity
Integer Products
Set Operations
Finite Sets
Identity Elements
Arithmetic
Direct Products
Equivalent Sets
Operations
Natural Powers
Family Unions and Intersections
Function Inverses
Comparisons
Integer Order
Natural Products
Integer Sums
Families
Function Composites
Function Images
Orders
Natural Sums
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Functions
Converse Relations
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Natural Order
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Symmetric Differences
Set Dualities
Set Unions and Intersections
Unordered Triples
Intersection of Empty Set
Successor Sets
Partitions
Pair Unions
Set Intersections
Ordered Pairs
Set Complements
Pair Intersections
Set Unions
Set Differences
Empty Set
Unordered Pairs
Set Specification
Set Inclusion
Standardized Accounts
Accounts
Deductions
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects