Why

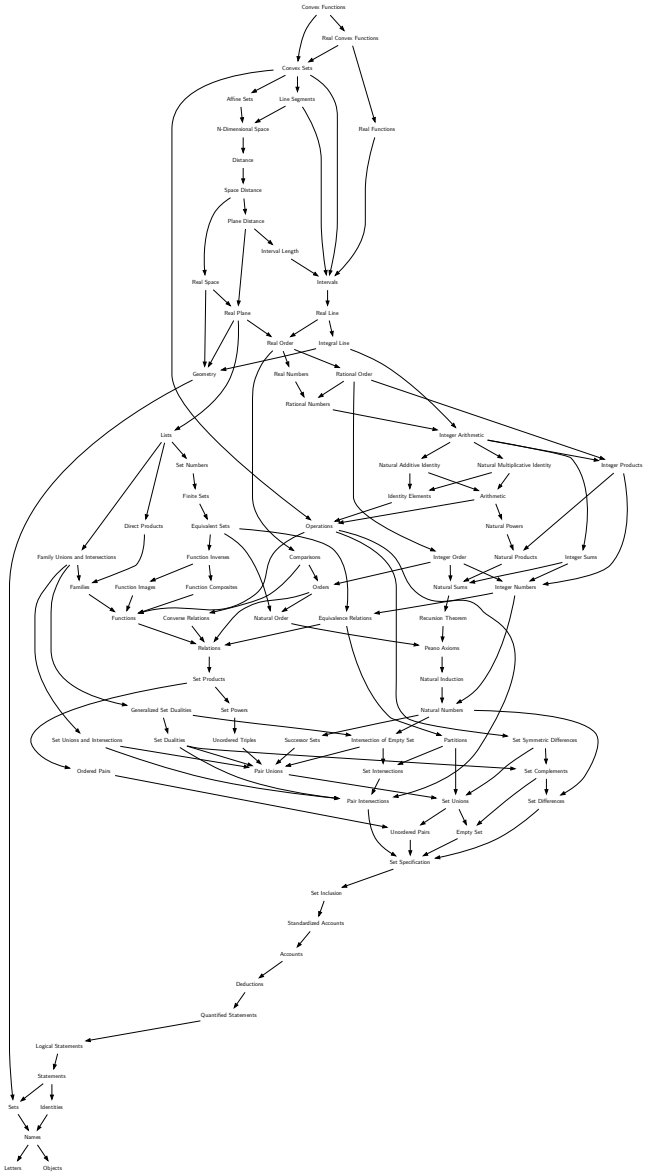
We generalize convex functions to $\mathbf{R}^n$.

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
Real Space
Intervals
Real Plane
Real Line
Real Order
Integral Line
Geometry
Real Numbers
Rational Order
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Integer Arithmetic
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Natural Additive Identity
Natural Multiplicative Identity
Integer Products
Finite Sets
Identity Elements
Arithmetic
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Equivalent Sets
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Family Unions and Intersections
Function Inverses
Comparisons
Integer Order
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Families
Function Images
Function Composites
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Natural Sums
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Functions
Converse Relations
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Equivalence Relations
Recursion Theorem
Relations
Peano Axioms
Set Products
Natural Induction
Generalized Set Dualities
Set Powers
Natural Numbers
Set Unions 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