Definition

Suppose $X \subset \mathbf{R}^d$ and $f : \mathbf{R}^d \to \mathbf{R}$. An optimization problem (X, f) is *convex* (a *convex optimization problem*, *convex program*, *ordinary convex program*) if X is a convex set and f is a convex function.

Other terminology

Real Convex Optimization Problems

Real Convex Functions

Real Convex Sets

Real Halfspaces

Real Hyperplane

Real Functions

Topological Interior

Subspace Orthogonal Complements

Subspace Dimension

Vector Space Dimension

Affine Set Dimension

Vector Space Basis

Affinely Independent Vectors

Span

Linearly Dependent Vectors

Orthogonal Complements

Real Subspace Dimension

Real Affine Sets and Subspaces

Real Affine Hulls

Linear Combinations

Real Inner Products

Vectors as Matrices

Real Vector Basis

Real Subspaces

Real Affine Sets

Vector Subspace

Real Inner Product

Real Matrices

N-Dimensional Line Segments

Topological Closure

Independent Set of Real Vectors

Real Vectors Space

Real Affine Combinations

Vectors

Real Linear Equations

Arrays

Topological Neighborhoods

Real Set Closure

Real Transform

Real Linear Combinations

Space Inner Product

N-Dimensional Lines

Real Norm

Linear Functions

Topology

Metrics

Real Limits

Plane Inner Product

Plane Norm

N-Dimensional Space

Space Vector

Plane Vector Sums and Differences

Absolute Value

Right Triangle Sides Relation

Real Square

Space Distance

Plane Vector

Distance

Real Arithmetic

Plane Distance

Interval Length

Real Multiplication Inverses

Square Numbers

Real Products

Real Space

Real Addition Inverses

Real Plane

Real Line

Intervals

Rational Arithmetic

Rational Multiplication Inverses

Squares

Integral Limit

Real Sums

Real Order

Real Summation

Real Sequences

Fields

Rational Sums

Rational Products

Geometry

Rational Order

Real Numbers

Natural Summation

Sequences

Rings

Rational Numbers

Integer Products

Natural Functions

Lists

Integer Arithmetic

Natural Multiplication Identity

Natural Addition Identity

Identity Elements

Natural Arithmetic

Inverse Elements

Integer Elements

Set Numbers

Finite Sets

Direct Products

Natural Powers

Integer Sums

Element Functions

Integer Order

Compositions

Family Operations

Function Inverses

Function Images

Natural Equation

Families

Natural Products

Natural Sums

Concrete Relations

Equivalence Relations

Functions

Natural Order

Family Unions and Intersections

Recursion Theorems

Relations

Peano Axioms

Ordered Pair Projections

Natural Induction

Set Products

Generalized Set Dualities

Natural Numbers

Set Powers

Set Dualities

Intersection of Empty Set

Set Partitions

Set Unions and Intersection

Set Symmetric Differences

Successor Sets

Unordered Triples

Pair Union

Set Intersections

Ordered Pairs

Set Complements

Set Union

Pair Intersection

Set Differences

Unordered Pairs

Empty Set

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Sets

Identities

Names

Letters

Objects