Main result

Let $(b_i)_{i\in I}$ be a family in $\mathbf{R}^n$ and $(\beta_i)_{i\in I}$ be a family in $\mathbf{R}$. The set

$$\{x \in \mathbf{R}^n \mid \langle x, b_i\rangle \leq \beta_i \text{ for all } i \in I\}$$

is convex.

A *polyhedral* convex set is one which can be expressed as the intersection of a finite family of closed halfspaces.


Real Convex Sets and Halfspaces
Real Polyhedra
Real Convex Sets
Real Halfspaces
Real Balls
Real Hyperplanes
Subspace Orthogonal Complements
Subspace Dimensions
Orthogonal Complements
Vector Space Dimensions
Vector Space Bases
Affine Set Dimensions
Linearly Dependent Vectors
Span
Affinely Independent Vectors
Subspaces
Real Subspace Dimensions
Real Affine Hulls
Real Affine Sets and Subspaces
Vectors as Matrices
Real Inner Products
Linear Combinations
Real Subspaces
Real Vector Bases
Real Affine Sets
Real Inner Product
Real Matrices
Vectors
Real Vector Spaces
Independent Set of Real Vectors
Real Affine Combinations
N-Dimensional Line Segments
Space Inner Product
Real Norm
Linear Equations
Real Linear Combinations
N-Dimensional Lines
Space Norm
Real Vectors
Points
Real Translation
Linear Functions
Plane Inner Product
Plane Norm
Space Vectors
Plane Vector Sums and Differences
N-Dimensional Space
Right Triangle Sides Relation
Absolute Value
Plane Vectors
Distance
Real Squares
Space Distance
Real Arithmetic
Plane Distance
Real Multiplicative Inverses
Interval Length
Real Products
Real Space
Intervals
Real Addition Inverses
Square Numbers
Real Plane
Real Line
Rational Multiplication Inverses
Rational Arithmetic
Real Sums
Real Order
Squares
Integer Line
Real Summation
Rational Products
Rational Order
Rational Sums
Real Numbers
Geometry
Fields
Natural Summation
Rational Numbers
Rings
Lists
Integer Arithmetic
Natural Fractions
Set Numbers
Direct Products
Integer Products
Natural Multiplicative Identity
Natural Additive Identity
Finite Sets
Identity Elements
Natural Arithmetic
Equivalent Sets
Inverse Elements
Comparisons
Integer Order
Function Inverses
Element Functions
Natural Powers
Integer Sums
Family Operations
Natural Equations
Family Union and Intersections
Orders
Integer Numbers
Function Images
Function Composites
Natural Products
Operations
Finites
Equations
Converse Relations
Equivalence Relations
Functions
Natural Sums
Natural Order
Relations
Recursive Theorems
Ordered Pair Projections
Peano Axioms
Set Products
Natural Induction
Set Powers
Natural Numbers
Generalized Set Dualities
Set Symmetric Differences
Partitions
Unordered Triples
Intersection of Empty Set
Successor Sets
Set Dualities
Set Unions and Intersections
Ordered Pairs
Set Complements
Set Intersections
Pair Unions
Set Unions
Set Differences
Pair Intersections
Unordered Pairs
Empty Set
Set Specification
Set Equality
Set Inclusion
Deduction
Quantified Statements
Logical Statements
Statements
Identities
Sets
Names
Letters
Objects