

CONVEX HULLS

Why

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Definition

The $convex \ hull$ of a subset of n-dimensional space is the intersection of all convex sets containing the set.

Notation

We denote the convex hull of $S \subset \mathbb{R}^n$ by conv S.

Characterization

Prop. 1. Let $S \subset \mathbb{R}^n$. conv S is the set of all convex combinations of elements of S.

Prop. 2. The convex hull of $\{b_1, \ldots, b_m\} \subset \mathbb{R}^n$ consists of all vectors

$$\lambda_1 b_1 + \lambda_2 b_2 + \dots + \lambda_m b_m.$$

where $\lambda_i \geq 0$ and $\sum_i \lambda_i = 1$.

¹Future editions will include.

