Polytopes.

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March 12, 2023

1 Basics.

Definition 1 (Convex Polygon)**.** *P will be said a convex polygon if for every $x, y \in P$ we have that any point z that lays on the line between x and y belongs to P.*

1.1 Different Constructions.

Consider two different polytopes $P, Q \subset \mathbb{R}^d$ then we could construct a thired polytop by:

1. *Intersection, takeing the $P \cap Q \subset \mathbb{R}^d$*
2. *Minkeoski sum, $P+Q = \{p + q : p \in P, q \in Q\} \subset \mathbb{R}^d$*
3. *Product, $P \times Q = \{(p, q) : p \in P, q \in Q\} \subset \mathbb{R}^{2d}$*