Convex Optimization Note

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March 12, 2019

1 Affine Set

1.1 Definition

A set $\mathcal{A}$ is called affine set when it satisfied:

> If $x_1 \in \mathcal{A}$ and $x_2 \in \mathcal{A}$, then, $\forall\theta \in \mathcal{R}$, $x = \theta x_1 + (1-\theta)x_2$ also belong to $\mathcal{A}$.

The expression $\theta x_1 + (1-\theta)x_2$ represent a line that cross through x_1 and x_2. Hence, affine set can be explained intuitively as:

> Affine set is a set that contain the line which cross through any two point within this set.

1.2 Properties