Affine Sets

1 Why

2 Definition

The *line through* two points x and y in $\mathbf{R}^n$ is the set

$$\{z \in \mathbf{R}^n \mid z = (1-a)x + y \text{ for } a \in \mathbf{R} \text{ and } x, y \in \mathbf{R}^n\}.$$

An *affine* set is a subset of $\mathbf{R}^n$ that contains the line through any two of its points.

2.1 Other Terminology

Some authors call affine sets *affine varieties* or *linear varieties*.

3 Examples

The empty set is is an affine set. So is $\mathbf{R}^n$.

Proposition 1. *All singletons are affine sets.*