

Notation

- \mathbb{N} is the set $\{1, 2, 3, \dots\}$ of all natural numbers
- \mathbb{R} is the set of all real numbers
- \forall is read “for all”
- \exists is read “there exists”
- \in is read “element of”
- \notin is read “not an element of”
- $\{ A \mid B \}$ is read “the set of all A such that B ”
- If S is a set and T is a subset of S , then

$$S \setminus T = \{ x \in S \mid x \notin T \}$$

is the set S with the elements of T removed.

- if n is a natural number

$$\mathbb{R}^n = \{ (x_1, x_2, \dots, x_n) \mid x_1 \in \mathbb{R}, x_2 \in \mathbb{R}, \dots, x_n \in \mathbb{R} \}$$

is the set of n -component vectors.

- If S and T are sets, then $f : S \rightarrow T$ means that f is a function which assigns to each element of S an element of T .
- $[a, b] = \{ x \in \mathbb{R} \mid a \leq x \leq b \}$
- $(a, b] = \{ x \in \mathbb{R} \mid a < x \leq b \}$
- $[a, b) = \{ x \in \mathbb{R} \mid a \leq x < b \}$
- $(a, b) = \{ x \in \mathbb{R} \mid a < x < b \}$