

Some important sets:

$$\emptyset = \{\}$$

empty set

 \mathbb{N}

natural numbers

 \mathbb{Z}

integers

 \mathbb{Z}^-

negative integers

 \mathbb{Z}^+

positive integers

$$\mathbb{Z}^{\text{nonneg}} = \mathbb{Z}^+ \cup \{0\}$$

nonnegative integers

 $2\mathbb{Z}$

even integers

 $\mathbb{Z} - 2\mathbb{Z}$

odd integers

 \mathbb{Q}

rational numbers

 \mathbb{Q}^-

negative rational numbers

 \mathbb{Q}^+

positive rational numbers

$$\mathbb{Q}^{\text{nonneg}} = \mathbb{Q}^+ \cup \{0\}$$

nonnegative rational numbers

 \mathbb{R}

real numbers

 \mathbb{R}^-

negative real numbers

 \mathbb{R}^+

positive real numbers

$$\mathbb{R}^{\text{nonneg}} = \mathbb{R}^+ \cup \{0\}$$

nonnegative real numbers

 \mathbb{C}

complex numbers

 \mathbb{H}

quaternions

some set theory and operations

Suppose A, B are sets.

$a \in A$

a is an element of A

$a \notin A$

a is not an element of A

$\{a_1, \dots, a_n\}$

set with elements a_1, \dots, a_n

A^c

A complement

$A \subset B$ or $A \subseteq B$

A is a subset of B

$A \not\subset B$ or $A \not\subseteq B$

A is not a subset of B

$A = B$

A equals B

$A \cup B$

A union B

$A \cap B$

A intersect B

$A - B$

set difference A minus B

(x, y)

ordered pair

(x_1, x_2, \dots, x_n)

ordered n -tuple

$A \times B$

Cartesian product of A & B

$A_1 \times \dots \times A_n$

Cartesian product of sets A_1, \dots, A_n

$\mathcal{P}(A)$

power set of A

$N(A) = |A|$

the number of elements in set A