



The Bright Side of Mathematics

Start Learning Sets – Part 1

Propositional Logic
+
Naive set theory

Logic
+
Axioms of
set theory

Goal:

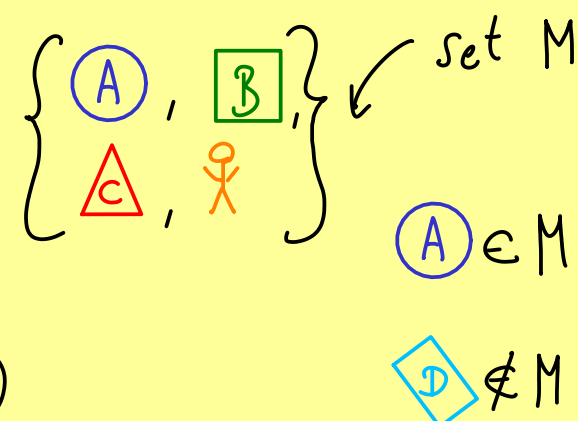
doing mathematics

foundation of mathematics

Set: collection of distinct objects into a whole

Such an object x inside a set M is called an element of M , write: $x \in M$.

If x is not such an object inside the set M , we write: $x \notin M$ means: $\neg(x \in M)$



A set can be defined by giving all its elements:

$$A := \{2, 5, 6\}$$

defined by

Examples: Empty set: $\emptyset := \{\}$

Natural numbers: $\mathbb{N} := \{1, 2, 3, 4, 5, \dots\}$

Natural numbers (including zero): $\mathbb{N}_0 := \{0, 1, 2, 3, 4, \dots\}$

Integers: $\mathbb{Z} := \{\dots, -2, -1, 0, 1, 2, \dots\}$

Rational numbers $\mathbb{Q}$

Real numbers $\mathbb{R}$

Complex numbers $\mathbb{C}$

$\leadsto$ quantifiers $\forall \exists$ predicates $x \in \mathbb{N}$