Definition

Let Σ be a finite set (alphabet). A *formal language* (or *language*) is a subset of finite-length strings of elements of Σ.

Examples

Let $\Sigma = \{0, 1\}$. Then $\varnothing$ is a language, as are the sets $\{0, 1\}$ and $\{01, 001, 111, 1101010\}$.

Notation

We denote the finite strings of Σ by $\mathsf{str}(\Sigma)$. Other common notation is Σ^*, which we avoid in these sheets for its collision with adjoints.

Formal Languages

Alphabets

Lists

Direct Products

Set Numbers

Finite Sets

Equivalent Sets

Function Inverses

Natural Order

Family Unions and Intersections

Function Images

Function Composites

Families

Functions

Equivalence Relations

Relations

Peano Axioms

Ordered Pair Projections

Set Products

Natural Induction

Set Powers

Natural Numbers

Generalized Set Dualities

Partitions

Unordered Triples

Successor Sets

Intersection of Empty Set

Set Dualities

Set Unions and Intersections

Ordered Pairs

Set Intersections

Pair Unions

Set Complements

Set Unions

Set Differences

Pair Intersections

Unordered Pairs

Empty Set

Set Specification

Set Equality

Set Inclusion

Deductions

Quantified Statements

Logical Statements

Statements

Identities

Sets

Names

Letters

Objects