

Insiemi Numerici (Numeric Sets)

Davide Pulvirenti

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1 Introduction

Insiemi numerici, or numeric sets, are fundamental concepts in mathematics that play a crucial role in various branches of mathematics and its applications. A numeric set is a collection of distinct numbers or elements, and it serves as a building block for various mathematical structures and operations.

2 Basic Definitions

2.1 Set Notation

A numeric set is typically denoted by a capital letter. For example, A , B , or C can represent numeric sets. The elements in a set are enclosed in curly braces, like $\{1, 2, 3, 4, 5\}$.

2.2 Cardinality

The cardinality of a set is the number of elements it contains. For a set A , the cardinality is denoted as $|A|$.

2.3 Subsets

If every element of set A is also an element of set B , we say that A is a subset of B , denoted as $A \subseteq B$.

2.4 Union and Intersection

The union of two sets A and B , denoted $A \cup B$, is the set of all elements that belong to A , B , or both. The intersection of sets A and B , denoted $A \cap B$, contains elements that are in both A and B .

3 Types of Numeric Sets

3.1 Natural Numbers (\mathbb{N})

The set of natural numbers includes all positive integers starting from 1, i.e., $\mathbb{N} = \{1, 2, 3, 4, \dots\}$.

3.2 Integers (\mathbb{Z})

The set of integers includes all positive and negative whole numbers, along with zero, i.e., $\mathbb{Z} = \{\dots, -3, -2, -1, 0, 1, 2, 3, \dots\}$.

3.3 Rational Numbers (\mathbb{Q})

The set of rational numbers consists of numbers that can be expressed as fractions, where the numerator and denominator are integers, and the denominator is not zero. For example, $\frac{3}{4}$ is a rational number.

3.4 Real Numbers (\mathbb{R})

The set of real numbers includes all rational and irrational numbers. It forms a continuous number line, encompassing all possible values.

4 Conclusion

Insiemi numerici are a fundamental concept in mathematics, providing the foundation for various mathematical operations and structures. Understanding the properties and relationships of numeric sets is crucial for many mathematical and scientific applications.

5 Diagram

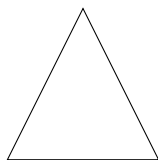


Figure 1: TikZ Diagram Example

6 Formula

Euler's formula, which relates the exponential function, cosine, and sine:

$$e^{ix} = \cos(x) + i \sin(x) \quad (1)$$

7 Table

Set	Cardinality
\mathbb{N}	Countably Infinite
\mathbb{Z}	Countably Infinite
\mathbb{Q}	Countably Infinite
\mathbb{R}	Uncountably Infinite

Table 1: Cardinalities of Numeric Sets

References

- [1] Myself, *Introduction to Set Theory*, Myself, Today.
- [2] Myself, *Mathematical Analysis: Concepts and Applications*, Myself, Today.