1   2.1 - Sets

Sets are groups of objects, often Numbers. Objects in sets usually have something in common, as otherwise a set would be nonsensical.

1.1   Common Sets

1. The set of all Complex numbers - $\mathbb{C}$ (\mathbb{C})

2. The set of all Real numbers - $\mathbb{R}$ (\mathbb{R})

3. The set of all Rational numbers - $\mathbb{Q}$ (\mathbb{Q})

4. The set of all Integer numbers - $\mathbb{Z}$ (\mathbb{Z})

5. The set of all Natural numbers - $\mathbb{N}$ (\mathbb{M})

6. The set of all Imaginary numbers - $\mathbb{I}$ (\mathbb{I})

7. The empty Set - $\emptyset$ or $\{\}$ (\emptyset or \{ \})

$$\mathbb{N} \in \mathbb{Z} \in \mathbb{Q} \in \mathbb{R} \in \mathbb{C}$$
$$\mathbb{I} \in \mathbb{C}$$

1.2   Subsets

The set A is a *subset* of B iff B contains **all** objects of A. A being a subset of B can also be expressed as B is a *superset* of A. Subsets are written as $\in$ (\in) in equations.

1.3   Size of a Set

$|S|$ denotes the size, or number of *distinct*[1] objects in set S. Size is also called the *Cardinality* of a **finite** set.

1.4   Power Sets

A Power Set is one that includes all subsets of another set. Power Sets are denoted by $\mathcal{P}(S)$ (\mathcal { P} (S)) in equations.

1.5   Ordered n-tuple

An ordered n-tuple is an ordered collection denoted by $(a_1, a_2, ...)$ ((a_1, a_2, ...)) Ordered tuples are equal if they have the same elements at the same locations.

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[1]Distinct objects means that equivalent objects are only counted once, e.g. $|2, 2| = 1$ as 2 is only counted once