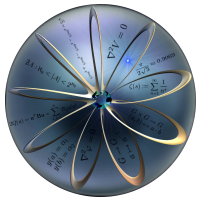

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infinite

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Synonym	infinite set
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Related topic	Finite
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A set S is *infinite* if it is not `http://planetmath.org/Finite`finite; that is, there is no $n \in \mathbb{N}$ for which there is a bijection between n and S.

Assuming the `http://planetmath.org/AxiomOfChoice`Axiom of Choice (or the Axiom of Countable Choice), this definition of infinite sets is equivalent to that of `http://planetmath.org/DedekindInfinite`Dedekind-infinite sets.

Some examples of finite sets:

- The empty set: $\{\}$.
- $\{0, 1\}$
- $\{1, 2, 3, 4, 5\}$
- $\{1, 1.5, e, \pi\}$

Some examples of infinite sets:

- $\{1, 2, 3, 4, \ldots\}$.
- The primes: $\{2, 3, 5, 7, 11, \ldots\}$.
- The rational numbers: $\mathbb{Q}$.
- An interval of the reals: $(0, 1)$.

The first three examples are countable, but the last is uncountable.