

Cardinality of infinite sets

We will say that $|X| = |Y|$ if $\exists f : X \rightarrow Y$ where f is a bijection.

A set X is **countably infinite** if there is a bijection from X to \mathbb{N} .
Using the prior notation, we say X is countably infinite if $|X| = |\mathbb{N}|$.

A set is **countable** if it is finite or countable infinite.

We will prove that $|\mathbb{N}| = |\mathbb{Z}| = |\mathbb{Z}^+|$ (where $\mathbb{N} = \{0, 1, 2, \dots\}$).