Sample chapter

Section

This is a sample chapter structure.

Definition (Real numbers)

We denote $\mathbb{R}$ as the set of real numbers. Intuitively, this set contains all the "decimals" including the non-terminating ones.

Theorem (Cantor)

The cardinality $|\mathbb{R}|$ is larger than $|\mathbb{Z}|$.

Proof. Left as an exercise. □

Corollary: There is no bijective function mapping $\mathbb{Q}$ to $\mathbb{R}$.

Proof. There is a bijective function from $\mathbb{Z}$ to $\mathbb{Q}$. □

Example

1.3 is a real number. So we say $1.3 \in \mathbb{R}$.
π is a real number. So we say $\pi \in \mathbb{R}$.

Exercises

1. Show that all the zeros of $\zeta(s)$ lie on the line $\Re(z) = 1/2$.