Definition 1. A rational number is a fraction \( \frac{a}{b} \).

Example 2. \( \frac{1}{2} \). \( \text{Note that } b \neq 0! \)

Example 3. A number that isn’t rational is the number \( \pi = 3.14159 \ldots \)

We now prove that the rational numbers are indeed a field.

Theorem 4. The set of rational numbers \( \mathbb{Q} \) is countable.

Proof. We can see this pretty easily by looking at the following diagram. That diagram shows us that the positive rational numbers are countable. We can then count all the rational numbers by starting with zero, and then using this counting but overlaying the negative rationals. In other words, we enumerate the rationals

\[
0, 1, -1, 2, -2, \frac{1}{2}, -\frac{1}{2}, 3, -\frac{1}{3}, \ldots
\]

This is an abrupt ending. You might include a last sentence of conclusion.