

Claim: $\sqrt{2}$ is not rational

Fill in the details of the proof

- Suppose $\exists q \in \mathbb{Q}$ such that $q^2 = 2$
 - Write $q = \frac{a}{b}$ where $a, b \in \mathbb{Z}$ are relatively prime
 - Then $a^2 = 2b^2$
 - Thus a is even (why?)
 - Thus b is even (why?)
 - This is a contradiction (why?)
- Therefore ...