The Real Numbers

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1 The Real Numbers

1.1 The irrationality of $\sqrt{2}$

1.2 Preliminaries

`Notation`

- $\forall \rightarrow$ For all/each/every
- $\exists \rightarrow$ There exists
- $\mathbb{R} \setminus \mathbb{Q} \rightarrow$ Irrationals
- $\mathbb{R} \rightarrow$ Real numbers
- $\mathbb{Z} \rightarrow$ Integers
- $\mathbb{Q} \rightarrow$ Rational numbers
- $\mathbb{N} \rightarrow$ Natural numbers
- $BWOC \rightarrow$ By way of contradiction
- $\rightarrow\!\!\!\!\!\!\times\!\!\!\!\leftarrow \rightarrow$ Contradiction
- $! \rightarrow$ Unique/factorial
- $\square \rightarrow$ End of proof (Quod Erat Demonstrandum)
- $\epsilon \rightarrow$ Epsilon, usually a small positive quantity
- $\ni \rightarrow$ Such that