

mathematical proofs

direct proofs

indirect proofs

proof by induction

proof by construction

mathematical proofs

a **proof** is an argument that demonstrates why a conclusion is true, subject to certain standards of truths

a **mathematical proof** is an argument that demonstrates why a statement is true, following the rules of mathematics

direct proofs

- proof by deduction
- **proof by induction**
- proof by exhaustion
- **proof by construction**

indirect proofs

- proof by contradiction
- proof by counterexample

our first proof (by construction)