



proof by induction















# proof by induction

- use the principle of mathematical induction to show that some result is true for all natural numbers  $n$
- the proof, step by step:
  1. **The base case**: prove that  $P(0)$  is true
  2. **Inductive step**: prove that if  $P(k)$  is true then  $P(k + 1)$  is true
  3. Conclude by induction that  $P(n)$  is true for all  $n \in \mathbb{N}$



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