### Direct Proof

B.ven directly. Mathematically expressed, direct proofs have the form B A B A B A A → BB →, where A A is In the case of direct proof, we start with certain preconditions or prerequisites and gradually derive the assertion from them. We show the correctness of the statement to be pro-

the prerequisite and is the statement to be proved. The implication arrow means that follows from . This is pronounced “ implies ” or “from follows ” or “if , then

”

#### Example: Direct proof

Let x ∈ ℝ with x < 0. Then −x > 0−. x x < 0 ←→ x + (−x) < −x ←→

We prove the statement by adding on both sides:

•. Then n + (n + 1) + (n + 2) is divisible by 3.

According to the precondition,

ber. For any natural number k ∈ ℕ, 3 ⋅ k is

be an odd number. Then , the claim therefore follows. ⋅ (n + 1) = 3n + 3 = n + n + n + 1 + 2 = n + (n n2 + 2k) + 1n □n =+ also divisible by 3. Because 3

as

and must therefore be odd.