Formalize and disprove the statement “There is a natural number that is not equal to any natural number.”.

§  \( \exists n: \text{nat} \cdot \forall m: \text{nat} \cdot n \neq m \)

Leaving the domain \( \text{nat} \) implicit,

\[ \exists n \cdot \forall m \cdot n \neq m \]

specialization: replace \( m \) with \( n \)

\[ \Rightarrow \exists n \cdot n \neq n \]

\( \neq \) is irreflexive

\[ = \exists n \cdot \bot \]

Identity

\[ = \bot \]