

well-ordering principle A nonnull set of $\mathbb{N} \Rightarrow A$ has a least member

Let B be set $\{1, 2, \dots, k\}$ such that $1, \dots, k$ are not in A

1 is in B and is its least member.

$1, \dots, k$ not in $A \Rightarrow k+1$ not in A , otherwise $k+1$ would be A 's least member

\Rightarrow by induction, B is \mathbb{N}

\Rightarrow all \mathbb{N} is not in A , but A was assumed not to be the null set

\Rightarrow there is no nonnull set of \mathbb{N} without a least member