Recursively defined set

- $S_0 = \emptyset$
- $S_n = S_{n-1} \cup \{n\}$ for $n \geq 1$.

Theorem: $\forall n \in \mathbb{Z}^+$, $S_n = \{x \in \mathbb{Z}^+ | x \leq n\} = \{1, 2, \ldots, n\}$.

We will prove this two ways:

- First proof is by contradiction.
- Second proof is by induction.