Exercise 3.143. [1WS] *Let $f : \mathbb{N} \to \mathbb{N}$ be an assigned function and I its image, prove that $A \subseteq \mathbb{N}$ exists such that $f|_A$ is injective and $f(A) = I$.* (Hint it may be useful to know that the usual order of $\mathbb{N}$ is a well-order *cf* [07R] and [26Y]).

Solution 1. [1WT]

Note: The result is true for any function $f : A \to B$, but the proof requires the axiom of choice.