

Two proofs of the same statement

Let A_n be a sequence of sets $n = 1, 2, \dots$, defined by

- ▶ $A_1 = \{100\}$
- ▶ $A_n = A_{n-1} \cup \{n + 99\}$ for $n \geq 2$

Find a closed form solution for A_n and prove it correct in two ways:
by induction and by contradiction.