9. Prove that if a set A of natural numbers contains n_0 and contains $k+1$ whenever it contains k, then A contains all natural numbers $\geq n_0$.

Proof.

Let $x \geq n_0$ be a natural number in A. Then $x+1$ is in A. Since the same argument can be made for $x+1$ and $x+2$, it follows that $k \in A$ for all natural numbers k such that $k \geq n_0$.