(52B)

By construction, $a_{n_1} > a_{n_2} > \cdots$

On the other hand, if $|J| < \infty$, let $n_1 \geq 1$ exceed every $j \in J$. Having constructed $n_1 < n_2 < \cdots < n_k$ with $a_{n_1} \leq a_{n_2} \leq \cdots \leq a_{n_k}$ (since $n_k \notin J$) $\exists\, n_{k+1} > n_k$ s.t. $a_{n_k} \leq a_{n_{k+1}}$, and the desired conclusion follows by induction.