Math 111

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i. Show that for all x, $y \in \omega$, if $x \in y$ then $x \subseteq y$.

ii. Show that for all $x \in \omega$, either $\emptyset \in x$ or $x = \emptyset$.

iii. Show that for all $x \in \omega$, $x \notin x$.

iv. Show that for all x, $y \in \omega$, if $y \in x$ then either $S(y) \in x$ or $S(y) = x$.

v. Show that if x, y, $z \in \omega$ are such that $x \in y$ and $y \in z$ then $x \in z$.

vi. Show that any nonempty subset of ω has a least element (for ϵ).

vii. Show that if $x \in \omega$ then $x \subseteq \omega$.