

Exercise set 1

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1. Prove that for any non-empty set A there exists a unique set B such that $x \in B \leftrightarrow x \in$ every element of A . (This is theorem 2B in Enderton's book.)
2. Prove that there is no set to which every set belongs. (This is theorem 2A in Enderton's book.)
3. Show that for any set A ,

$$\bigcup P(A) = A,$$

where " $P(A)$ " = power set of A , and " $\bigcup A$ " denotes the union of A .

4. Show that if $a \in B$, then $P(a) \in P(P(\bigcup B))$.