

Structural Induction

The power set of a set A , $\mathbb{P}(A)$, can be defined recursively.

Definition: Power Set

Let A be a set. The smallest set that satisfies the properties below is the power set of A . An equivalent definition is that the power set is composed by all the subsets of A .

- $\emptyset \in \mathbb{P}(A)$
- $B \in \mathbb{P}(A) \wedge x \in A \leftrightarrow B \cup \{x\} \in \mathbb{P}(A)$

Doubt

NEED HELP! Is the definition OK? Should probably prove the equivalence. Does the previous definition qualify as a recursive one?