**Inductively Specified Set**

* Set S, Universe U
* S is the smallest subset of U such that
  + Z e S
  + If m e S then S(m) e S
    - S = {z, S(z), S(S(z)),…} U {C} Satisfy the clauses?
      * No, missing {C, S(C), S(S(C)))….}
* How do you S(S(S(z))) is in the set?
  + If you can show that z is in S then rule 2 shows that S(z) is in the set
    - Rule 2 then says if S(z) is in the set then S(S(z)) is in the set
    - Therefore S(S(S(z))) must be in the set as well.
* Prose
* Rule
* Grammar

Structural Recursion

* Technique for defining functions over inductive sets S
* When defining f over an inductive set S return:
  + Known values, for s in S justified by base rules
  + Composition of known values and f applied to the parts that conform s, for s in S justified by inductive rules

structural Induction

* S is an inductive set and P is a property of its elements
* How to prove
  + For all x in S.P(X)
* Prove P is true on simple structures (base rules0
* Prove that, if P is true on the substructures of x (base rules) then It is true on all structures X (Structural Induction).