

Structure and Order

A. Polyadic Relations and Operations

1. N-tuple (defined in terms of ordered couple). (Think about 'degenerate' cases!)
2. N-ary relation and function. Special cases (binary etc.)
3. N-ary relation an operation on a set.
4. Structure.
5. Some examples.

B. Isomorphism on Structures

1. Notation for isomorphism. Notion defined.
2. Isomorphism an equivalence.
3. Substructures; restrictions of structures; isomorphism *into*.

C. Order Defined

1. Some basic properties of relational structures: reflexivity; irreflexivity; transitivity; symmetry; antisymmetry; asymmetry; connectedness.
2. Equivalence relations. Some examples. The notion of an equivalence class.
3. Orders: partial; strict partial; order; strict.
4. Standard notation for order relationships.
5. Examples.

D. Minima and Maxima

1. *Minimal* element of a subset; *minimum*. (Similarly for *maximal* and *maximum*).
2. Results on minimal and minimum elements.
3. Lower and Upper Bounds (Greatest, Least). Supremum/Infimum.