

Introduction to Analysis Notes

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1 Sets and Lists

Definition 1.1. A set is an unordered group of distinct elements.

Definition 1.2. The empty set (denoted \emptyset) is the unique set having no elements.

While sets are unordered groups of distinct elements, lists (also called n -tuples) are ordered groups of elements which are not necessarily distinct. An ordered pair (a, b) is a list of a length two (a tuple), where a , and b are elements of some set.

Definition 1.3. An ordered pair (a, b) is a tuple of elements of some set.

Ordered pairs (and n -tuples more generally) can be represented as sets themselves - the pair (a, b) can be represented as the set $\{a, \{a, b\}\}$.

Definition 1.4. The Cartesian product of two sets A and B is denoted $A \times B$. It is equal to $\{(a, b) \mid a \in A, b \in B\}$.