Sequences

Definition: A set is a collection of objects, each appearing at most once, and order matters.

Example: \( \{1, 2, 3, 4\} \)

Diagonal Proof:
- If \( A \subseteq B \), then \( A \subseteq C \)
- If \( B \subseteq A \), then \( B \subseteq C \)
- If \( A \cup B \subseteq C \), then \( A \subseteq C \) or \( B \subseteq C \)

Function:
- \( f: A \to B \) is a function if for all \( a \in A \), there is a unique \( b \in B \) such that \( f(a) = b \).

Sequences:
- \( (1, 2, 3, 4) \) is a sequence of length 4.
- \( (1, 2, 3) \) is a subsequence of \( (1, 2, 3, 4) \).

Diagonal Subsequence:
- \( (1, 2, 3) \) is a subsequence of \( (1, 2, 3, 4) \).
- \( (1, 2) \) is a subsequence of \( (1, 2, 3, 4) \).

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