

3. INDEXED SETS

Index set. I ,

just a set of tags for other sets we're really interested in.

Indexed family. $\{A_i \mid i \in I\}$,

the set of sets that is tagged by the index set I .

Union of the family.

$$\bigcup_{i \in I} A_i = \{a \mid a \in A_i \text{ for some } i \text{ in } I\}$$

Intersection of the family.

$$\bigcap_{i \in I} A_i = \{a \mid a \in A_i \text{ for all } i \text{ in } I\}$$

Notation. For $I = \{i \in \mathbb{Z} \mid m \leq i \leq n\}$, write

$$\bigcap_{i \in I} A_i = \bigcap_{i=m}^n A_i \quad \text{and} \quad \bigcup_{i \in I} A_i = \bigcup_{i=m}^n A_i,$$

compare

$$\sum_{i=m}^n x_i = x_m + x_{m+1} + \dots + x_n$$

in usual algebra.