

Set Operations

- The **union** of two sets A and B , denoted by $A \cup B$, is the set of all elements belonging to A or B

$$A \cup B = \{x : x \in A \text{ or } x \in B\}$$

- The **intersection** of two sets A and B , denoted by $A \cap B$, is the set of all elements belonging to both A and B

$$A \cap B = \{x : x \in A \text{ and } x \in B\}$$

- If two sets A and B have no elements in common, then $A \cap B = \emptyset$ and A and B are said to be **disjoint**.
- The **difference** $A - B$ of two sets A and B is defined as

$$A - B = \{x : x \in A \text{ and } x \notin B\}$$

- For a set A , its **complement** is

$$\bar{A} = U - A = \{x : x \in U \text{ and } x \notin A\}$$

- The set difference $A - B$ is sometimes called the **relative complement** of B in A .