

## Set Operations

Let  $A$  and  $B$  be sets.

The union of  $A$  and  $B$  is the set  $A \cup B = \{x : x \in A \text{ or } x \in B\}$ .

The intersection of  $A$  and  $B$  is the set  $A \cap B = \{x : x \in A \text{ and } x \in B\}$ .

The difference of  $A$  and  $B$  is the set  $A - B = \{x : x \in A \text{ and } x \notin B\}$ .

Sets  $A$  and  $B$  are disjoint iff  $A \cap B = \emptyset$ .

Let  $U$  be the universe and  $A \subseteq U$ . The complement of  $A$  is the set  $A^C = U - A$ .

Let  $A$  and  $B$  be sets. The product (or cross product) of  $A$  and  $B$  is  $A \times B = \{(a, b) : a \in A \text{ and } b \in B\}$ .