

- Exercise 1.** Let  $A$  be a set. Show that  $A \cup A = A$ .
- Exercise 2.** Let  $A$  be a set. Show that  $A \setminus A = \emptyset$ .
- Exercise 3.** Let  $A$  be a set. Show that  $A \cap \emptyset = \emptyset$ .
- Exercise 4.** Let  $A, B, C$  be sets. Show that  $A \cap (B \cap C) = (A \cap B) \cap C$ .
- Exercise 5.** Let  $A, B$  be sets. Show that  $A \cap B = B \cap A$ .
- Exercise 6.** Let  $A, B, C$  be sets. Show that  $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ .
- Exercise 7.** Let  $A, B$  be sets. Show that  $(A \cap B)' = A' \cup B'$ .
- Exercise 8.** Let  $A, B$  be sets. Show that  $A \subseteq B$  iff  $A \cap B = A$ .
- Exercise 9.** Let  $A, B$  be sets. Show that  $(A \setminus B) \cap (B \setminus A) = \emptyset$ .
- Exercise 10.** Let  $A, B, C$  be sets. Show that  $(A \cup B) \times C = (A \times C) \cup (B \times C)$ .
- Exercise 11.** Let  $A, B$  be sets. Show that  $(A \cap B) \setminus B = \emptyset$ .
- Exercise 12.** Let  $A, B$  be sets. Show that  $(A \cup B) \setminus B = A \setminus B$ .
- Exercise 13.** Let  $A, B$  be sets. Show that  $A \setminus (B \cup C) = (A \setminus B) \cap (A \setminus C)$ .
- Exercise 14.** Let  $A, B$  be sets. Show that  $A \cap (B \setminus C) = (A \cap B) \setminus (A \cap C)$ .
- Exercise 15.** Let  $A, B$  be sets. Show that  $(A \setminus B) \cup (B \setminus A) = (A \cup B) \setminus (A \cap B)$ .