

# Set Identities

1. **Associative laws**

$$A \cup (B \cup C) = (A \cup B) \cup C$$

$$A \cap (B \cap C) = (A \cap B) \cap C$$

2. **Commutative laws**

$$A \cup B = B \cup A$$

$$A \cap B = B \cap A$$

3. **Distributive laws**

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$$

$$A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$$

4. **De Morgan's laws**

$$\overline{A \cup B} = \bar{A} \cap \bar{B}$$

$$\overline{A \cap B} = \bar{A} \cup \bar{B}$$

5. **Idempotent laws**

$$A \cup A = A$$

$$A \cap A = A$$

6. **Identity laws**

$$A \cup \emptyset = A$$

$$A \cap U = A$$

7. **Domination laws**

$$A \cup U = U$$

$$A \cap \emptyset = \emptyset$$

8. **Absorption laws**

$$A \cap (A \cup B) = A$$

$$A \cup (A \cap B) = A$$

9. **Complementation law**

$$\overline{\bar{A}} = A$$

10. **Complement laws**

$$A \cup \bar{A} = U$$

$$A \cap \bar{A} = \emptyset$$