

Let all sets referred to below be subsets of a universal set U .

Commutative Laws: For all sets A and B ,

$$A \cup B = B \cup A \text{ and } A \cap B = B \cap A.$$

Commutative Laws: For all sets A , B , and C ,

$$(A \cup B) \cup C = A \cup (B \cup C) \text{ and } (A \cap B) \cap C = A \cap (B \cap C).$$

Distributive Laws: For all sets A , B , and C ,

$$A \cup (B \cap C) = (A \cup B) \cap (A \cup C) \text{ and } A \cap (B \cup C) = (A \cap B) \cup (A \cap C).$$

Identity Laws: For all sets A ,

$$A \cup \emptyset = A \text{ and } A \cap U = A.$$

Complement Laws: For all sets A ,

$$A \cup \bar{A} = U \text{ and } A \cap \bar{A} = \emptyset.$$

Double Complement Law: For all sets A ,

$$\overline{(\bar{A})} = A.$$

Idempotent Laws: For all sets A ,

$$A \cup A = A \text{ and } A \cap A = A.$$

Universal Bound Laws: For all sets A ,

$$A \cup U = U \text{ and } A \cap \emptyset = \emptyset.$$

De Morgan's Laws: For all sets A , and B ,

$$\overline{A \cup B} = \bar{A} \cap \bar{B} \text{ and } \overline{A \cap B} = \bar{A} \cup \bar{B}.$$

Absorption Laws: For all sets A and B ,

$$A \cup (A \cap B) = A \text{ and } A \cap (A \cup B) = A.$$

Complements of U and \emptyset :

$$\bar{U} = \emptyset \text{ and } \bar{\emptyset} = U.$$

Set Difference Law: For all sets A and B ,

$$A \setminus B = A \cap \bar{B}.$$