Table 1-1 Laws of the Algebra of Sets

Idempotent Laws

1a. $A \cup A = A$

1b. $A \cap A = A$

Associative Laws

2a. $(A \cup B) \cup C = A \cup (B \cup C)$

2b. $(A \cap B) \cap C = A \cap (B \cap C)$

Commutative Laws

3a. $A \cup B = B \cup A$

3b. $A \cap B = B \cap A$

Distributive Laws

4a. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$

4b. $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$

Identity Laws

5a. $A \cup \varnothing = A$

5b. $A \cap U = A$

6a. $A \cup U = U$

6b. $A \cap \varnothing = \varnothing$

Involution Law

7. $(A^c)^c = A$

Complement Laws

8a. $A \cup A^c = U$

8b. $A \cap A^c = \varnothing$

9a. $U^c = \varnothing$

9b. $\varnothing^c = U$

DeMorgan's Laws

10a. $(A \cup B)^c = A^c \cap B^c$

10b. $(A \cap B)^c = A^c \cup B^c$