

Important Set Identities

A, B and C subset of a universe D.

1. $\overline{\overline{A}} = A$ Complementation law
2. $A \cup A = A$ Idempotent 1
3. $A \cap A = A$ Idempotent 2
4. $A \cup B = B \cup A$ Commutativity 1
5. $A \cap B = B \cap A$ Commutativity 2
6. $A \cup (B \cup C) = (A \cup B) \cup C$ Associativity 1
7. $A \cap (B \cap C) = (A \cap B) \cap C$ Associativity 2
8. $A \cup (B \cap C) = (A \cup B) \cap (A \cup C)$ Distributivity 1
9. $A \cap (B \cup C) = (A \cap B) \cup (A \cap C)$ Distributivity 2
10. $\overline{A \cup B} = \overline{A} \cap \overline{B}$ De Morgan's law 1
11. $\overline{A \cap B} = \overline{A} \cup \overline{B}$ De Morgan's law 2
12. $A \cup \emptyset = A$ Absorption law 1
13. $A \cup D = D$ Absorption law 2
14. $A \cap \emptyset = \emptyset$ Absorption law 3
15. $A \cap D = A$ Absorption law 4
16. $\overline{\overline{D}} = D$ Complement law 1
17. $\overline{\emptyset} = D$ Complement law 2
18. $A \cup \overline{A} = D$ Complement law 3
19. $A \cap \overline{A} = \emptyset$ Complement law 4
20. $A \cup (A \cap B) = A$
21. $A \cap (A \cup B) = A$