1 第 5 讲

1.1 规律

1.1.1 交换律

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

1.1.2 结合律

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

1.1.3 分配律

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

1.1.4 同一律

$$A \cup \varnothing = A$$
$$A \cap U = A$$

1.1.5 互补律

$$A \cup \overline{A} = U$$
$$A \cap \overline{A} = \varnothing$$

1.1.6 幂等律

$$A \cup A = A$$
$$A \cap A = A$$

1.1.7 上下界律

$$A \cup U = u$$
$$A \cap \varnothing = \varnothing$$

1.1.8 吸收率

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

1.1.9 对合律

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

1.1.10 零一律

$$\overline{\varnothing} = U$$
$$\overline{U} = \varnothing$$

1.1.11 德摩根定律

$$\overline{(A \cap B)} = \overline{A} \cup \overline{B}$$
$$\overline{(A \cup B)} = \overline{A} \cap \overline{B}$$

1.2 集合的集合

$$\bigcup S = \{x | \text{对于某些} X \in S, x \in X\}$$
$$\bigcap S = \{x | \text{对于所有} X \in S, x \in X\}$$
$$S = \{A_1, A_2, A_3, \cdots, A_n\}$$
$$\bigcup S = \bigcup_{i=1}^{n} A_i$$
$$\bigcap S = \bigcap_{i-1}^{n} A_i$$
$$\bigcup S = \bigcup_{i=1}^{\infty} A_i$$
$$\bigcap S = \bigcap_{i=1}^{\infty} A_i$$