

P268. 1. 2.

1.

已知 $M \subseteq N$, 即 $\forall x, x \in M \rightarrow x \in N \equiv T \Leftrightarrow \neg x \in M \vee x \in N \equiv T$

$$\begin{aligned}\therefore M &= \{x | x \in M\} \\ &= \{x | x \in M \wedge (\neg x \in M \vee x \in N)\} \\ &= \{x | x \in M \wedge \neg x \in M \vee x \in M \wedge x \in N\} \\ &= \{x | x \in M \wedge x \in N\} \\ &= M \cap N\end{aligned}$$

$$\begin{aligned}\therefore N &= \{x | x \in N\} \\ &= \{x | x \in N \vee \neg(\neg x \in M \vee x \in N)\} \\ &= \{x | x \in N \vee (x \in M \wedge \neg x \in N)\} \\ &= \{x | (x \in N \vee x \in M) \wedge (x \in N \vee \neg x \in N)\} \\ &= \{x | x \in M \vee x \in N\} \\ &= M \cup N\end{aligned}$$

2.

$$\begin{aligned}\therefore M \cap (N \cup L) &= \{x | x \in M \wedge (x \in N \vee x \in L)\} \\ &= \{x | x \in M \wedge x \in N \vee x \in M \wedge x \in L\} \\ &= (M \cap N) \cup (M \cap L)\end{aligned}$$

$$\begin{aligned}\therefore M \cup (N \cap L) &= \{x | x \in M \vee (x \in N \wedge x \in L)\} \\ &= \{x | (x \in M \vee x \in N) \wedge (x \in M \vee x \in L)\} \\ &= (M \cup N) \cap (M \cup L)\end{aligned}$$