

3.26.1. Valuation and Anti-Valuation Sentence Problems

A. Without using truth tables or truth trees, decide whether each of the following argument is **valid** or **invalid**.

(1)	(2)	(3)	(4)
1. $(P \vee Q)$ 2. $(\sim P \vee \sim Q)$ 3. $(\sim P \vee Q)$ <hr/> $\therefore \sim(P \vee \sim Q)$	1. $(P \vee Q)$ 2. $(P \vee \sim Q)$ <hr/> $\therefore \sim(P \vee Q)$	1. $\sim(P \vee Q)$ <hr/> $\therefore (\sim P \vee \sim Q)$	1. $\sim(P \vee Q)$ <hr/> $\therefore (P \vee Q)$

B. For each of the following sentences, state whether it is a **tautology**, a **contradiction**, or **neither**.

1. $(\sim P \wedge \sim Q) \wedge (\sim P \wedge Q)$
2. $(\sim P \vee \sim Q) \vee (\sim P \vee Q)$
3. $(\sim P \wedge \sim Q) \vee (\sim P \wedge \sim Q)$
4. $(\sim P \wedge \sim Q) \vee (P \wedge \sim Q) \vee (P \wedge Q)$
5. $(\sim P \wedge \sim Q) \vee (\sim P \wedge Q) \vee (P \wedge \sim Q) \vee (P \wedge Q)$
6. $(\sim P \vee \sim Q) \wedge (P \vee Q) \wedge (P \vee \sim Q) \wedge (\sim P \vee Q)$
7. $(\sim P \vee \sim Q) \wedge (P \vee \sim Q) \wedge (\sim P \vee Q)$