

For any two atomic sentences P and Q , is the following sentence true?

Why?

$$(P \Rightarrow Q) \Leftrightarrow (\neg P \vee Q)$$

答案: Yes, the above sentence is true. For the sentence $P \Rightarrow Q$, if P is true, then $P \Rightarrow Q$ is true if Q is true, and $P \Rightarrow Q$ is false if Q is false. Since now P is true, $\neg P \vee Q$ is true if Q is true, and $\neg P \vee Q$ is false if Q is false. On the other hand, for the sentence $P \Rightarrow Q$, if P is false, then $P \Rightarrow Q$ is true always. Since now P is false, $\neg P \vee Q$ is also true always.