

① Which of the following is  
Tautology.

Ⓐ  $P \vee q \rightarrow P$

Ⓒ  $P \vee (P \rightarrow q)$

Ⓑ  $P \vee (q \rightarrow P)$

Ⓓ  $P \rightarrow (P \rightarrow q)$

$$\textcircled{A} \quad p \vee q \rightarrow p$$

$$(p \vee q) \rightarrow p \Rightarrow (p \vee q) \rightarrow p$$

$$A \rightarrow P$$

$$T \rightarrow f$$

$$T \quad f$$

$$\boxed{f}$$

Not tautology.



$$\textcircled{13} \quad p \vee (q \rightarrow p) \quad p \vee (q \rightarrow p)$$

$$A \vee B$$

$$f \vee (T \rightarrow f)$$

$$f \vee f$$

$$f \vee f$$

$$f$$

$$f$$

Not Tautology

$$\begin{array}{c} \textcircled{1} \quad p \vee (p \rightarrow q) \\ p \vee f \end{array} \quad \begin{array}{c} p \vee (p \rightarrow q) \\ f \vee (f \rightarrow T) \\ f \vee f \end{array} \Rightarrow \begin{array}{c} T \\ T \end{array}$$

$$\begin{array}{c} f \\ f \vee T \end{array} \quad \begin{array}{c} \textcircled{2} \quad f \vee (f \rightarrow f) \\ f \vee T \end{array}$$

$$\begin{array}{c} T \\ \textcircled{3} \quad T \vee (T \rightarrow f) \\ T \vee f \end{array}$$

This is a tautology.



$$p \rightarrow (p \rightarrow q)$$

$$T \rightarrow (T \rightarrow f)$$

$$A \rightarrow B$$

$$T \rightarrow f$$

$$T \rightarrow f$$

$$f$$

$$f$$

Not a tautology