

$$1. A \rightarrow C, D \rightarrow A, D \vee B \vdash A \vee C$$

$$\{ \neg B \vee C, \neg D \vee A, D \vee B, \neg A \vee \neg C \}$$

$$\begin{array}{c} \neg C \vee C \\ \neg A \vee B - B \vee C \end{array}$$

Суперечності немає

Контрприклад:

$$\begin{aligned} \tau(A) &= F \\ \tau(B) &= T \\ \tau(C) &= F \\ \tau(D) &= T \end{aligned}$$

Невірно

$$2. \text{ Якщо } A \vee B, \text{ то } A \rightarrow (C \vee B)$$

$$\overset{1}{A \vee (C \vee B)}$$

Вірно  $A \vee B$

$$\begin{array}{c} \vdash B \vee A \vdash C \vee (B \vee A) \vdash (C \vee B) \vee A \vdash A \vee (C \vee B) \end{array}$$

$$3. A \rightarrow \neg Q, \neg P \rightarrow R, X \vee \neg R \vdash P \vee \neg Q$$

$$\{ \neg X \vee \neg Q, P \vee R, X \vee \neg R, \neg P, Q \}$$

$$\begin{array}{c} \neg X \\ \neg Q - \neg R \end{array}$$

~~Вірно~~ Множина суперечлива.  
Отже, вірно.



4. если  $\vdash A \Rightarrow (B \rightarrow C)$ , то  $\vdash A \rightarrow C$ .

$\vdash A \rightarrow (B \rightarrow C), \vdash A \not\vdash C$

$$\vdash A, \vdash C, \vdash A \oplus (B \rightarrow C)$$
 $\vdash A, \vdash A, \vdash C$ 

$\vdash B \supset C, \vdash A, \vdash C$

$$\frac{-1B, +A, +C}{+C, +A, +C}$$

Дерево незаконное  $\Rightarrow$  небыстро

Контроль:  $\tau(A) = T$   
 $\tau(B) = F$

$$\tau(B) = F$$
$$\tau(L) = F$$

$$5. ((A \rightarrow C) \& (B \rightarrow C)) \rightarrow (A \vee B \rightarrow C)$$

$$\underline{\vdash ((A \rightarrow C) \& (B \rightarrow C)) \Rightarrow (A \vee B \rightarrow C)}$$

( $\rightarrow$ )

$$\vdash (A \rightarrow C) \& (B \rightarrow C), \vdash A \vee B \rightarrow C$$

( $\rightarrow$ )

$$\vdash A \rightarrow C, \vdash B \rightarrow C, \vdash A \vee B \Rightarrow C$$

( $\rightarrow$ )

$$\vdash A \& B, \vdash C, \vdash A \rightarrow C, \vdash B \rightarrow C$$

( $\vee$ )

$$\vdash A, \vdash C, \vdash A \& C, \vdash B \rightarrow C$$

$$\vdash B, \vdash C, \vdash A \rightarrow C, \vdash B \& C$$

( $\rightarrow$ )

$$\vdash A, \vdash A, \vdash C, \vdash B \rightarrow C$$

$$\vdash C, \vdash C, \vdash A \& C$$

$$\vdash B, \vdash B, \vdash C, \vdash A \rightarrow C$$

$$\vdash C, \vdash C, \vdash A \rightarrow C$$

( $\rightarrow$ )

'x'

'x'

'x'

'x'

Отже, вірно