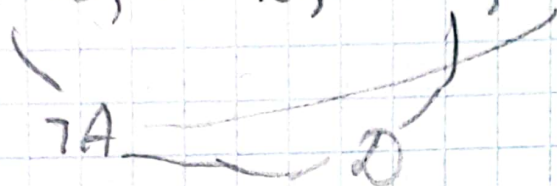


1. $\{A \rightarrow B, C \rightarrow D, A \vee D\} \models B \vee C$

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



Отже, супротивно: $\sigma(A) = F$

$\sigma(B) = F$

$\sigma(C) = F$

$\sigma(D) = T$

Келіпсін

2. $\{A \rightarrow (B \vee C), \neg A \vdash B \rightarrow C, \text{мо} \vdash A \rightarrow C\}$

$\neg A \vee (B \vee C)$

$\neg B \vee C$

$\neg A \vee C$

$\vdash_{\text{зак}} \neg A \vee (B \vee C) \vdash_{\text{кр}} (B \vee C) \vee A \vdash_{\text{з}} B \vee (C \vee A) \vdash_{\text{к}} (C \vee A) \vee C$

$\vdash_{\text{зак}} \neg B \vee C \vdash_{\text{к}}$

$\vdash_{\text{к}} \neg A \vee ((C \vee \neg A) \vee C) \vdash_{\text{кр}} ((C \vee \neg A) \vee C) \vee \neg A \vdash_{\text{з}}$

$\vdash_{\text{з}} (C \vee \neg A) \vee (C \vee \neg A) \vdash_{\text{кр}} C \vee \neg A \vdash_{\text{кр}} \neg A \vee C$

3. $\{B \rightarrow \neg A, D \rightarrow C, A \vee \neg C\} \models D \rightarrow \neg B$

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

Отже, супротивно: $\sigma(A) = T$

$\sigma(B) = F$

$\sigma(C) = F$

$\sigma(D) = F$

Келіпсін

4, якщо $\vdash A \rightarrow B$, то $\vdash (A \vee C) \rightarrow B$

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

($\vdash \rightarrow$)

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

Дерево замикає \Rightarrow невірне

Контрприклад: $\tau(A) = F$
 $\tau(B) = T$
 $\tau(C) = F$

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

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

($\vdash \rightarrow$)

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

($\vdash \&$)

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

Дерево замикає \Rightarrow невірне

Контрприклад: $\tau(A) = F$
 $\tau(B) = F$
 $\tau(C) = T$