

Ylimääräiset tehtävät

Johd. Log. I

Vihjeitä.

$$1. ((p_0 \vee p_1) \rightarrow p_2) \wedge \neg(\neg p_2 \rightarrow (p_0 \vee p_1)) \vee$$

$$\begin{array}{c} | \\ (p_0 \vee p_1) \rightarrow p_2 \vee \end{array}$$

$$\begin{array}{c} | \\ \neg(\neg p_2 \rightarrow (p_0 \vee p_1)) \vee \end{array}$$

$$\begin{array}{c} | \\ \neg p_2 \end{array}$$

$$\begin{array}{c} | \\ \neg(p_0 \vee p_1) \vee \end{array}$$

$$\begin{array}{c} | \\ \neg p_0 \end{array}$$

$$\begin{array}{c} | \\ \neg p_1 \end{array}$$

$$\begin{array}{cc} \swarrow & \searrow \\ \neg(p_0 \vee p_1) & p_2 \end{array}$$

$$\begin{array}{c} | \\ \neg p_0 \end{array}$$

$$\begin{array}{c} | \\ \times \end{array}$$

$$\begin{array}{c} | \\ \neg p_1 \\ \uparrow \uparrow \end{array}$$

Oksusta $\uparrow \uparrow$ saadaan: $v(p_0) = v(p_1) = v(p_2) = 0$

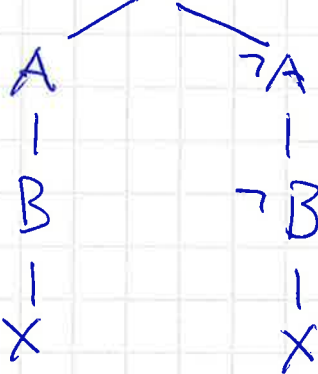
$$2. \quad \neg((A \leftrightarrow B) \wedge B) \rightarrow A \quad \vee$$

$$\downarrow$$
$$(A \leftrightarrow B) \wedge B \quad \vee$$

$$\downarrow$$
$$\neg A$$

$$\downarrow$$
$$A \leftrightarrow B \quad \vee$$

$$\downarrow$$
$$B$$



$$3 \quad \neg((C \rightarrow (A \vee B)) \rightarrow ((C \wedge \neg B) \rightarrow \neg A)) \vee$$

$$|$$
$$C \rightarrow (A \vee B) \vee$$

$$|$$
$$\neg((C \wedge \neg B) \rightarrow \neg A) \vee$$

$$|$$
$$C \wedge \neg B \vee$$

$$|$$
$$\neg A$$

$$|$$
$$C$$

$$|$$
$$\neg B$$

$$|$$
$$\neg C$$

$$|$$
$$X$$

$$A \vee B \vee$$

$$|$$
$$A$$

$$|$$
$$X$$

$$|$$
$$B$$

$$|$$
$$X$$

$$4. \neg((A \wedge (B \vee C)) \rightarrow ((A \wedge B) \vee (A \wedge C))) \vee$$

$$|$$
$$A \wedge (B \vee C) \vee$$

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

$$|$$
$$A$$

$$|$$
$$B \vee C \vee$$

$$|$$
$$\neg(A \wedge B) \vee$$

$$|$$
$$\neg(A \wedge C) \vee$$

$$/ \quad \backslash$$
$$B \quad C$$

$$/ \quad \backslash$$
$$\neg A \quad \neg B$$

$$|$$
$$X$$

$$|$$
$$X$$

$$/ \quad \backslash$$
$$\neg A \quad \neg B$$

$$|$$
$$X$$

$$/ \quad \backslash$$
$$\neg A \quad \neg C$$

$$|$$
$$X$$

$$|$$
$$X$$