

Logik TUT 4

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4.1 Wandern 2.0

4.1.1

- a) nein
- b) nein
- c) ja
- d) nein
- e) nein

4.1.2

- A)
 $\Box(C \wedge \Diamond B)$
- B)
 $\Diamond(C \wedge \Box A)$
- C)
 $\neg \Diamond A \rightarrow \Box(B \vee C)$
- D)
 $\Box \Box B$

4.1.3

- A)
1
- B)
nicht existent

4.2 Aequivalenz oder nicht

4.2.1

$$\begin{aligned}\varphi_1 &= \neg \Box A \vee \neg \Box \neg B \\ &\equiv \Diamond \neg A \vee \Diamond \neg \neg B \\ &\equiv \Diamond(A \rightarrow B) = \psi_1\end{aligned}$$

4.2.2

$$\begin{aligned}\varphi_2 &= \Box(A \rightarrow B) \\ &\equiv \Box(\neg A \vee B) \\ &\equiv \Box \neg A \vee \Box B \\ &\neq \neg(\Box A) \vee \Box B \\ &\equiv \Box A \rightarrow \Box B = \psi_2\end{aligned}$$

4.2.3

$$\begin{aligned}\varphi_3 &= \Diamond(A \rightarrow (\Box B \rightarrow \Diamond C)) \\ &\equiv \Diamond(A \rightarrow (\neg \Box B \vee \Diamond C)) \\ &\equiv \Diamond(A \rightarrow (\Diamond \neg B \vee \Diamond C)) \\ &\equiv \Diamond(A \rightarrow \Diamond(\neg B \vee C)) \\ &\equiv \Diamond \neg A \vee \Diamond \Diamond(\neg B \vee C) \\ &\equiv \neg \Box A \vee \Diamond \Diamond(\neg B \vee C) \\ &\equiv \Box A \rightarrow \Diamond \Diamond(\neg B \vee C) = \psi_3\end{aligned}$$

4.2.4

$$\begin{aligned}\varphi_4 &= \Box(A \rightarrow (\Diamond B \rightarrow \Box C)) \\ &\equiv \Box(A \rightarrow (\neg \Diamond B \vee \Box C)) \\ &\equiv \Box(\neg A \vee (\Box \neg B \vee \Box C)) \\ &\equiv \Box(\neg A \vee \Box(\neg B \vee C)) \\ &\equiv \Box \neg A \vee \Box \Box(\neg B \vee C) \\ &\equiv \neg \Diamond A \vee \Box \Box(\neg B \vee C) \\ &\equiv \Diamond A \rightarrow \Box \Box(\neg B \vee C) \\ &\neq \Box A \rightarrow \Box \Box(\neg B \vee C) = \psi_4\end{aligned}$$