

Status Beendet**Begonnen** Donnerstag, 20. März 2025, 15:51**Abgeschlossen** Donnerstag, 20. März 2025, 16:16**Dauer** 25 Minuten 1 Sekunde**Bewertung** 8,27 von 10,00 (82,67%)**Frage 1**

Teilweise richtig

Erreichte Punkte 0,60 von 1,00

Given the entailment $P \rightarrow Q, R \rightarrow S, P \vee R \models \neg Q \rightarrow S$, fill in the blanks to make the statements correct.

The tableau $t : P \rightarrow Q, t : R \rightarrow S, t : P \vee R, f : \neg Q \rightarrow S$ , which means that the entailment is .



All interpretations that make $P \rightarrow Q, R \rightarrow S, P \vee R$  make $\neg Q \rightarrow S$ , which means that the entailment is .

Your answer is partially correct.

Sie haben 3 richtig ausgewählt.

Frage 2

Richtig

Erreichte Punkte 1,00 von 1,00

How many interpretations of $\{a \leftarrow 0, a \leftarrow 1\} \times \{b \leftarrow 0, b \leftarrow 1\} \times \{c \leftarrow 0, c \leftarrow 1\}$ satisfy the formula $(a \rightarrow b) \rightarrow \neg c$?

(Your answer should be a single integer without padding)

Antwort: 

Frage 3

Richtig

Erreichte Punkte 1,00 von 1,00

Let

 W : The weather is good. B : Anna goes to uni by bike. T : Anna arrives in uni on time.

Which is the formalization of the sentence

'If Anna goes to uni by bike, she arrives on time.'?

- ☐ a. $\neg B \rightarrow \neg T$
- ☐ b. $(T \rightarrow B) \wedge (B \rightarrow T)$
- ☐ c. $B \wedge T$
- ☒ d. $B \rightarrow T$ ✓

The answer is correct.

Frage 4

Richtig

Erreichte Punkte 1,00 von 1,00

Let F be a WFF such that $F = c \vee (a \wedge b)$. What is the resulting formula after replacing c by b and applying the syntactic simplifying rules?

- ☐ a. $a \vee b$
- ☒ b. b ✓
- ☐ c. $\neg b$
- ☐ d. $\neg c$
- ☐ e. $(b \vee (b \wedge c))$

Your answer is correct.

Frage 5

Richtig

Erreichte Punkte 1,00 von 1,00

Provide an interpretation that falsifies the following statement:

 $\neg((a \vee b \vee c) \rightarrow (a \wedge d) \models (\neg a \rightarrow (d \wedge \neg b)) \wedge b)$ *(interpretations should be written as a sequence of $\{0,1\}$ separated by commas representing the assignment of variables (a, b, c, d) in alphabetical order. For examples, $(a: 0, b: 1, c: 0, d: 1)$ would be written "0,1,0,1")*

Antwort: 0,0,0,0



Frage 6

Teilweise richtig

Erreichte Punkte 0,67 von 1,00

Let $\varphi(A)$ and $\varphi(B)$ be two propositional formulas. Which formula(s) is(are) a semantical consequence of $\varphi((A \wedge B) \vee \neg A)$?
(There is at least one correct answer, but there could be several.)

- ☐ a. $\varphi((A \rightarrow \neg B) \wedge A)$
- ☒ b. $\varphi((A \wedge \neg B) \rightarrow A)$ ✓
- ☒ c. $\varphi((\neg B \vee \neg A) \rightarrow A)$ ✗
- ☐ d. $\varphi((B \wedge \neg A) \vee B)$

The answer is partially correct.

Sie haben zu viele Optionen gewählt.

Frage 7

Richtig

Erreichte Punkte 1,00 von 1,00

Which of those sets of labeled formulas has a closed tableau derivation?

- ☐ a. **t:** $\neg(\neg B)$, **f:** $(A \wedge B)$
- ☐ b. **t:** $\neg(\neg B)$, **f:** $(A \vee B)$
- ☒ c. **t:** (B) , **f:** $(A \vee B)$ ✓
- ☐ d. **t:** $\neg(\neg A)$, **f:** $(A \vee B)$

Your answer is correct.

Frage 8

Richtig

Erreichte Punkte 1,00 von 1,00

Let $\varphi(A)$ and $\varphi(B)$ be propositional formula. Which of the following statements hold?

- ☐ a. $\varphi(A \models B)$ iff $\varphi(\neg A \vee B)$ is unsatisfiable
- ☐ b. $\varphi(A \models B)$ iff $\varphi(A \wedge B)$ is valid
- ☐ c. $\varphi(A \models B)$ iff $\varphi(\neg(A \rightarrow B))$ is valid
- ☒ d. $\varphi(A \models B)$ iff $\varphi(A \rightarrow B)$ is valid ✓

Your answer is correct.

Frage 9

Richtig

Erreichte Punkte 1,00 von 1,00

What is the result of the resolution rule applied on the clauses $(a \vee \neg b)$ and $(b \vee \neg c)$?

- ☐ a. $(a \vee b \vee \neg c)$
- ☐ b. $(\neg c)$
- ☐ c. (a)
- ☒ d. $(a \vee \neg c)$ ✓
- ☐ e. $(a \vee \neg b \vee \neg c)$

Your answer is correct.

Frage 10

Falsch

Erreichte Punkte 0,00 von 1,00

What is the minimum number of branches in the tableau derivation of $((p \wedge q) \rightarrow s, \neg q \rightarrow \neg p, \neg s \models \neg p)$ have?

(Your answer should be a single integer without padding)

Antwort:

2

