

tab.1 Tableaux for K

mod:tab:prk:
sec

Example tab.1. We give a closed tableau that shows $\vdash (\Box\varphi \wedge \Box\psi) \rightarrow \Box(\varphi \wedge \psi)$.

1.	1 F	$(\Box\varphi \wedge \Box\psi) \rightarrow \Box(\varphi \wedge \psi)$	Assumption	
2.	1 T	$\Box\varphi \wedge \Box\psi$	\rightarrow T 1	
3.	1 F	$\Box(\varphi \wedge \psi)$	\rightarrow T 1	
4.	1 T	$\Box\varphi$	\wedge T 2	
5.	1 T	$\Box\psi$	\wedge T 2	
6.	1.1 F	$\varphi \wedge \psi$	\Box F 3	
7.	1.1 F	φ	1.1 F ψ	\wedge F 6
8.	1.1 T	φ	1.1 T ψ	\Box T 4; \Box T 5
	⊗		⊗	

Example tab.2. We give a closed tableau that shows $\vdash \Diamond(\varphi \vee \psi) \rightarrow (\Diamond\varphi \vee \Diamond\psi)$:

1.	1 F	$\Diamond(\varphi \vee \psi) \rightarrow (\Diamond\varphi \vee \Diamond\psi)$	Assumption	
2.	1 T	$\Diamond(\varphi \vee \psi)$	\rightarrow T 1	
3.	1 F	$\Diamond\varphi \vee \Diamond\psi$	\rightarrow T 1	
4.	1 F	$\Diamond\varphi$	\vee F 3	
5.	1 F	$\Diamond\psi$	\vee F 3	
6.	1.1 T	$\varphi \vee \psi$	\Diamond T 2	
7.	1.1 T	φ	1.1 T ψ	\vee T 6
8.	1.1 F	φ	1.1 F ψ	\Diamond F 4; \Diamond F 5
	⊗		⊗	

Problem tab.1. Find closed tableaux in K for the following formulas:

1. $\Box\neg p \rightarrow \Box(p \rightarrow q)$
2. $(\Box p \vee \Box q) \rightarrow \Box(p \vee q)$
3. $\Diamond p \rightarrow \Diamond(p \vee q)$

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Bibliography