tab.1 Tableaux for K

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

1.	$1\,\mathbb{F}\ \ (\Box\varphi \wedge \Box\psi) \to \Box(\varphi \wedge \psi)$	Assumption
2.	$1\,\mathbb{T}\ \ \Box\varphi \wedge \Box\psi$	$\to\mathbb{F}\,1$
3.	$1\,\mathbb{F}\ \ \Box(\varphi \wedge \psi)$	$\to\mathbb{F}\,1$
4.	$1\,\mathbb{T}\ \ \Box\varphi$	$\wedge\mathbb{T}\,2$
5.	$1\,\mathbb{T}\ \ \Box\psi$	$\wedge\mathbb{T}\,2$
6.	$1.1\,\mathbb{F}\ \ \varphi \wedge \psi$	$\Box\mathbb{F}\,3$
7.	$1.1\,\mathbb{F}\ \ \varphi$ | $1.1\,\mathbb{F}\ \ \psi$	$\wedge\mathbb{F}\,6$
8.	$1.1\,\mathbb{T}\ \ \varphi$ | $1.1\,\mathbb{T}\ \ \psi$	$\Box\mathbb{T}\,4$; $\Box\mathbb{T}\,5$
	$\otimes$ | $\otimes$	

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

1.	$1\,\mathbb{F}\ \ \Diamond(\varphi \vee \psi) \to (\Diamond\varphi \vee \Diamond\psi)$	Assumption
2.	$1\,\mathbb{T}\ \ \Diamond(\varphi \vee \psi)$	$\to\mathbb{F}\,1$
3.	$1\,\mathbb{F}\ \ \Diamond\varphi \vee \Diamond\psi$	$\to\mathbb{F}\,1$
4.	$1\,\mathbb{F}\ \ \Diamond\varphi$	$\vee\mathbb{F}\,3$
5.	$1\,\mathbb{F}\ \ \Diamond\psi$	$\vee\mathbb{F}\,3$
6.	$1.1\,\mathbb{T}\ \ \varphi \vee \psi$	$\Diamond\mathbb{T}\,2$
7.	$1.1\,\mathbb{T}\ \ \varphi$ | $1.1\,\mathbb{T}\ \ \psi$	$\vee\mathbb{T}\,6$
8.	$1.1\,\mathbb{F}\ \ \varphi$ | $1.1\,\mathbb{F}\ \ \psi$	$\Diamond\mathbb{F}\,4$; $\Diamond\mathbb{F}\,5$
	$\otimes$ | $\otimes$	

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

1. $\Box\neg p \to \Box(p \to q)$
2. $(\Box p \vee \Box q) \to \Box(p \vee q)$
3. $\Diamond p \to \Diamond(p \vee q)$
4. $\Box(p \wedge q) \to \Box p$

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Bibliography