

## 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
$\swarrow$		
7.	1.1 F $\varphi$ 1.1 F $\psi$	$\wedge$ F 6
8.	1.1 T $\varphi$ 1.1 T $\psi$	$\Box$ T 4; $\Box$ T 5
	$\otimes$ $\otimes$	

**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
$\swarrow$		
7.	1.1 T $\varphi$ 1.1 T $\psi$	$\vee$ T 6
8.	1.1 F $\varphi$ 1.1 F $\psi$	$\Diamond$ F 4; $\Diamond$ F 5
	$\otimes$ $\otimes$	

**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