Definition prf.1. Each of the formulas $T$, $B$, $4$, and $5$ has a dual, denoted by a subscripted diamond, as follows:

- $p \to \Diamond p$ \hspace{1cm} (T$_\Diamond$)
- $\Diamond \Box p \to p$ \hspace{1cm} (B$_\Diamond$)
- $\Diamond \Diamond p \to \Diamond p$ \hspace{1cm} (4$_\Diamond$)
- $\Diamond \Box p \to \Box p$ \hspace{1cm} (5$_\Diamond$)

Each of the above dual formulas is obtained from the corresponding formula by substituting $\neg p$ for $p$, contraposing, replacing $\neg \Box \neg$ by $\Diamond$, and replacing $\neg \Diamond \neg$ by $\Box$. D, i.e., $\Box \varphi \to \Diamond \varphi$ is its own dual in that sense.

Problem prf.1. Show that for each formula $\varphi$ in Definition prf.1: $K \vdash \varphi \leftrightarrow \varphi_\Diamond$. 

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Bibliography