

$$\begin{aligned}
\varphi_1 \mathsf{U} \varphi_2 &\stackrel{\text{dsc}}{=} \varphi_1 \mathsf{U} (\varphi_2 \wedge (\varphi_1 \vee \textit{sing})) \\
&\stackrel{\text{t}}{=} \boxed{\varphi_1} \mathsf{U} (\boxed{\varphi_2} \wedge (\boxed{\varphi_1} \vee \textit{sing}) \wedge \textit{alive})
\end{aligned}$$