

$$\begin{aligned}
\varphi_1 \mathbf{W} \varphi_2 &= (\varphi_1 \mathbf{U} \varphi_2) \vee \mathbf{G} \varphi_1 \\
&\stackrel{\mathbf{dsc}, \mathbf{t}}{=} \boxed{\varphi_1} \mathbf{U} (\boxed{\varphi_2} \wedge (\boxed{\varphi_1} \vee \textit{sing}) \wedge \textit{alive}) \vee \\
&\quad \mathbf{G}(\boxed{\varphi_1} \vee \neg \textit{alive})
\end{aligned}$$