

$$\begin{aligned}
\mathbf{G} \varphi &= \neg \mathbf{F} \neg \varphi \\
&\stackrel{\text{dsc}}{=} \neg \mathbf{F} (\neg \varphi \wedge \textit{alive}) \\
&= \mathbf{G} (\boxed{\varphi} \vee \neg \textit{alive})
\end{aligned}$$