$\sigma = (\forall X. \exists Y. R(X,Y)) \Rightarrow \exists Y. \forall X. R(X,Y)$

$$
\begin{aligned}
\neg\sigma &= \neg((\forall X. \exists Y. R(X,Y)) \Rightarrow \exists Y. \forall X. R(X,Y)) \\
&= \neg(\neg(\forall X. \exists Y. R(X,Y)) \vee \exists Y. \forall X. R(X,Y)) \\
&= (\forall X. \exists Y. R(X,Y)) \wedge \neg\exists Y. \forall X. R(X,Y) \\
&= (\forall X. \exists Y. R(X,Y)) \wedge \forall Y. \exists X. \neg R(X,Y) \\
&= (\forall X. \exists Y. R(X,Y)) \wedge \forall Z. \exists W. \neg R(W,Z) \\
&= \forall X. \exists Y. \exists W. \forall Z. (R(X,Y) \wedge \neg R(W,Z)) \\
&= \forall X. \forall Z. (R(X, F(X)) \wedge \neg R(g(X), Z)) \\
&= \{ \underset{1}{\{R(X, F(X))\}}, \underset{2}{\{\neg R(g(X), Z)\}} \} = C
\end{aligned}
$$

1 y 2: $\mathrm{mgu}\{R(X_1, F(X_1)) \doteq R(g(X_2), Z)\}$

$= \mathrm{mgu}\{X_1 \doteq g(X_2), F(X_1) \doteq Z\}$ decompose

$= \mathrm{mgu}\{F(g(X_2)) \doteq Z\}$ elim $\{X_1 := g(X_2)\}$

$= \mathrm{mgu}\{\}$ swap, elim $\{Z := F(g(X_2))\}$

$S = \{X_1 := g(X_2), Z := F(g(X_2))\}$

$3 = S(\{\}) = \{\}$

$C \vdash \bot \Rightarrow \neg\sigma \vdash \bot \Rightarrow \vdash \sigma$

$\therefore \sigma$ válida