

weak-antecedent-surjection-conditional2^{11,40}

$\forall e:s:\mathbb{E}S, P_1, Q_1, P_2, Q_2:(\mathbb{E} \rightarrow \mathbb{P}), dcd_P_1:(e:\mathbb{E} \rightarrow \text{Dec}(P_1(e))), f:(\{e:\mathbb{E} \mid P_1(e)\} \rightarrow \{e:\mathbb{E} \mid Q_1(e)\}),$
 $g:(\{e:\mathbb{E} \mid P_2(e)\} \rightarrow \{e:\mathbb{E} \mid Q_2(e)\}).$
 $(\forall e:\mathbb{E}. (P_1(e) \Rightarrow (\neg(P_2(e))))$
 $\Rightarrow (\forall e:\mathbb{E}. \text{Dec}(Q_1(e)))$
 $\Rightarrow (\forall e:\mathbb{E}. \text{Dec}(Q_2(e)))$
 $\Rightarrow Q_1 \leftarrow \leftarrow = f == P_1$
 $\Rightarrow Q_2 \leftarrow \leftarrow = g == P_2$
 $\Rightarrow Q_1 \vee Q_2 \leftarrow \leftarrow = [P_1? f : g] == P_1 \vee P_2$