

t18_osalg_3 (TMMkhTqk- BZnXYX4gH8xMM3SEyriC9waQBzo)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v4_osalg_1 : \iota \Rightarrow o$ be given. Let $v5_osalg_1 : \iota \Rightarrow o$ be given. Let $l3_osalg_1 : \iota \Rightarrow o$ be given. Let $v3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v12_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r3_osalg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v13_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $m2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $g3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_osalg_3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r4_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_msualg_3 : \iota \Rightarrow o$ be given. Let $r1_osalg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_osalg_1 : \iota \Rightarrow o$ be given. Let $l2_osalg_1 : \iota \Rightarrow o$ be given. Let $r3_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
 & X0))) \Rightarrow (\forall X1.((v4_msualg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow \\
 & (\forall X2.((v4_msualg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)) \Rightarrow (\forall X3. \\
 & (m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) (u3_msualg_1 \\
 & X0 X2)) \Rightarrow ((r1_msualg_3 X0 X1 X2 X3) \Rightarrow ((r2_msualg_3 X0 X1 X2 X3) \Leftrightarrow (k6_msualg_3 \\
 & X0 X1 X2 X3 = g3_msualg_1 X0 (u3_msualg_1 X0 X2) (u4_msualg_1 X0 X2))))))
 \end{aligned}$$

(1)

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\
& X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v4_msualg_1 \\
& X1 X0) \wedge ((v12_osalg_1 X1 X0) \wedge ((v13_osalg_1 X1 X0) \wedge (l3_msualg_1 \\
& X1 X0)))))) \Rightarrow (\forall X2.((v4_msualg_1 X2 X0) \wedge ((v12_osalg_1 X2 X0) \wedge \\
& (l3_msualg_1 X2 X0)))) \Rightarrow (\forall X3.(m2_pboole X3 (u1_struct_0 \\
& X0) (u3_msualg_1 X0 X1) (u3_msualg_1 X0 X2))) \Rightarrow (((v1_osalg_3 X3 X0) \wedge \\
& (r1_msualg_3 X0 X1 X2 X3)) \Rightarrow ((v12_osalg_1 (k6_msualg_3 X0 X1 X2 X3) \\
& X0) \wedge ((v12_osalg_1 (k6_msualg_3 X0 X1 X2 X3) X0) \wedge ((v13_osalg_1 \\
& (k6_msualg_3 X0 X1 X2 X3) X0) \wedge (l3_msualg_1 (k6_msualg_3 X0 X1 X2 \\
& X3) X0)))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
& X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(l3_msualg_1 \\
& X2 X0)) \Rightarrow (\forall X3.(m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 \\
& X0 X1) (u3_msualg_1 X0 X2))) \Rightarrow ((r4_msualg_3 X0 X1 X2 X3) \Leftrightarrow ((r1_msualg_3 \\
& X0 X1 X2 X3) \wedge ((v2_msualg_3 X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) \\
& (u3_msualg_1 X0 X2)) \wedge (v1_msualg_3 X3))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\
& X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge \\
& (((v4_msualg_1 X1 X0) \wedge ((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge \\
& ((v4_msualg_1 X2 X0) \wedge ((v12_osalg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)))) \Rightarrow \\
& ((r3_osalg_3 X0 X1 X2) \Rightarrow (r3_osalg_3 X0 X2 X1))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\
& X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge \\
& (((v4_msualg_1 X1 X0) \wedge ((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge \\
& ((v4_msualg_1 X2 X0) \wedge ((v12_osalg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)))) \Rightarrow \\
& ((r3_osalg_3 X0 X1 X2) \Leftrightarrow (r1_osalg_3 X0 X1 X2))
\end{aligned} \tag{5}$$

Assume the following.

$$\forall X0.(l3_osalg_1 X0) \Rightarrow ((l1_osalg_1 X0) \wedge (l2_osalg_1 X0)) \tag{6}$$

Assume the following.

$$\forall X0.(l1_osalg_1 X0) \Rightarrow (l1_msualg_1 X0) \tag{7}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.((v12_osalg_1 X2 X0) \wedge \\ (l3_msualg_1 X2 X0)) \Rightarrow ((r1_osalg_3 X0 X1 X2) \Leftrightarrow (\exists X3.(m2_pboole \\ X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) (u3_msualg_1 X0 X2)) \wedge ((\\ r4_msualg_3 X0 X1 X2 X3) \wedge (v1_osalg_3 X3 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (\forall X2.(l3_msualg_1 \\ X2 X0) \Rightarrow (\forall X3.(m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 \\ X0 X1) (u3_msualg_1 X0 X2)) \Rightarrow ((r4_msualg_3 X0 X1 X2 X3) \Leftrightarrow ((r2_msualg_3 \\ X0 X1 X2 X3) \wedge (r3_msualg_3 X0 X1 X2 X3)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1.(((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \wedge \\ (l3_msualg_1 X1 X0)) \Rightarrow ((v3_msualg_1 X1 X0) \Rightarrow (X1 = g3_msualg_1 X0 \\ (u3_msualg_1 X0 X1) (u4_msualg_1 X0 X1))) \end{aligned} \quad (10)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v3_msualg_1 \\ X1 X0) \wedge ((v4_msualg_1 X1 X0) \wedge ((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 \\ X1 X0)))) \Rightarrow (\forall X2.((v3_msualg_1 X2 X0) \wedge ((v4_msualg_1 X2 X0) \wedge \\ ((v12_osalg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)))) \Rightarrow ((r3_osalg_3 X0 X1 \\ X2) \Rightarrow ((v13_osalg_1 X1 X0) \Leftrightarrow (v13_osalg_1 X2 X0)))))) \end{aligned}$$