

t15_osalg_3

(TMa3BLaqbhPt7n2sPZm7ZXCYyrQLoZ46zGr)

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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 $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $m2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v1_osalg_3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v11_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l1_osalg_1 : \iota \Rightarrow o$ be given. Let $l2_osalg_1 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
 & X0))) \Rightarrow (\forall X1.((v4_msualg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow \\
 & (\forall X2.((v4_msualg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)) \Rightarrow (\forall X3. \\
 & (m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) (u3_msualg_1 \\
 & X0 X2)) \Rightarrow (\forall X4.(m2_pboole X4 (u1_struct_0 X0) (u3_msualg_1 \\
 & X0 X1) (u3_msualg_1 X0 (k6_msualg_3 X0 X1 X2 X3)) \Rightarrow ((r8_pboole \\
 & (u1_struct_0 X0) X3 X4) \wedge (r1_msualg_3 X0 X1 X2 X3)) \Rightarrow (r2_msualg_3 \\
 & X0 X1 (k6_msualg_3 X0 X1 X2 X3) X4))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\
 & X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.(l3_msualg_1 \\
 & X1 X0) \Rightarrow ((v12_osalg_1 X1 X0) \Leftrightarrow ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge \\
 & ((v4_relat_1 (u3_msualg_1 X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 \\
 & (u3_msualg_1 X0 X1)) \wedge ((v1_partfun1 (u3_msualg_1 X0 X1) (u1_struct_0 \\
 & X0)) \wedge (v11_osalg_1 (u3_msualg_1 X0 X1) X0))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\ & X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\ & ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\ & X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v4_msualg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow \\ & (\forall X2. ((v4_msualg_1 X2 X0) \wedge (l3_msualg_1 X2 X0)) \Rightarrow (\forall X3. \\ & (m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) (u3_msualg_1 \\ & X0 X2)) \Rightarrow ((r1_msualg_3 X0 X1 X2 X3) \Rightarrow (m2_pboole X3 (u1_struct_0 X0) \\ & (u3_msualg_1 X0 X1) (u3_msualg_1 X0 (k6_msualg_3 X0 X1 X2 X3)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ & (\forall X3. (m2_pboole X3 X0 X1 X2) \Rightarrow ((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0. (l3_osalg_1 X0) \Rightarrow ((l1_osalg_1 X0) \wedge (l2_osalg_1 X0)) \quad (7)$$

Assume the following.

$$\forall X0. (l2_osalg_1 X0) \Rightarrow ((l1_msualg_1 X0) \wedge (l1_orders_2 X0)) \quad (8)$$

Assume the following.

$$\forall X0. (l1_orders_2 X0) \Rightarrow (l1_struct_0 X0) \quad (9)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ & X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))) \Rightarrow (\forall X1. ((v4_msualg_1 \\ & X1 X0) \wedge ((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. \\ & ((v4_msualg_1 X2 X0) \wedge ((v12_osalg_1 X2 X0) \wedge (l3_msualg_1 X2 X0))) \Rightarrow \\ & (\forall X3. (m2_pboole X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1) \\ & (u3_msualg_1 X0 X2)) \Rightarrow (\neg (r1_msualg_3 X0 X1 X2 X3) \wedge ((v1_osalg_3 \\ & X3 X0) \wedge (\forall X4. (m2_pboole X4 (u1_struct_0 X0) (u3_msualg_1 \\ & X0 X1) (u3_msualg_1 X0 (k6_msualg_3 X0 X1 X2 X3))) \Rightarrow (\neg (r8_pboole \\ & (u1_struct_0 X0) X3 X4) \wedge ((v1_osalg_3 X4 X0) \wedge (r2_msualg_3 X0 X1 \\ & (k6_msualg_3 X0 X1 X2 X3) X4)))))) \end{aligned}$$