

t5_msualg_2
(TMFBYojw4obBSudjpb48zuac9uYd3tzcQC1)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $g3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $m2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_msualg_1 : \iota \Rightarrow \iota$ be given. Let $k6_finseq_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_msualg_1 : \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $v3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & \quad X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (\forall X2.(m3_pboole \\ & \quad X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \Rightarrow ((r8_pboole (u1_struct_0 \\ & \quad X0) X2 (u3_msualg_1 X0 X1)) \Rightarrow ((v3_msualg_2 X2 X0 X1) \wedge (\forall X3. \\ & \quad (m1_subset_1 X3 (u4_struct_0 X0)) \Rightarrow (k3_msualg_2 X0 X1 X3 X2 = k5_msualg_1 \\ & \quad \quad X0 X3 X1)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & \quad X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (m1_msualg_2 (g3_msualg_1 \\ & \quad X0 (u3_msualg_1 X0 X1) (u4_msualg_1 X0 X1)) X0 X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(l1_msualg_1 \\ & X0))\wedge(((v1_relat_1 X1)\wedge((v4_relat_1 X1 (u1_struct_0 X0))\wedge((\\ & v1_funct_1 X1)\wedge(v1_partfun1 X1 (u1_struct_0 X0))))))\wedge(m2_pboole \\ & X2 (u4_struct_0 X0) (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 \\ & (u1_struct_0 X0) X1)) (k3_relat_1 (u2_msualg_1 X0) X1))))\Rightarrow(\forall X3. \\ & \forall X4.\forall X5.(g3_msualg_1 X0 X1 X2 = g3_msualg_1 X3 X4 X5)\Rightarrow \\ & ((X0 = X3)\wedge((X1 = X4)\wedge(X2 = X5)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\wedge \\ & (l3_msualg_1 X1 X0))\Rightarrow(m2_pboole (u4_msualg_1 X0 X1) (u4_struct_0 \\ & X0) (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 (u1_struct_0 X0) \\ & (u3_msualg_1 X0 X1))) (k3_relat_1 (u2_msualg_1 X0) (u3_msualg_1 \\ & X0 X1))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1_struct_0 X0)\wedge(l2_msualg_1 X1 X0))\Rightarrow \\ & ((v1_relat_1 (u3_msualg_1 X0 X1))\wedge((v4_relat_1 (u3_msualg_1 \\ & X0 X1) (u1_struct_0 X0))\wedge((v1_funct_1 (u3_msualg_1 X0 X1))\wedge(v1_partfun1 \\ & (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge \\ & (l1_msualg_1 X0)))\wedge(l3_msualg_1 X1 X0))\Rightarrow(\forall X2.(m1_msualg_2 \\ & X2 X0 X1)\Rightarrow(l3_msualg_1 X2 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\Rightarrow(\forall X1. \\ & (l3_msualg_1 X1 X0)\Rightarrow(l2_msualg_1 X1 X0)) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(l1_msualg_1 X0)\Rightarrow(l5_struct_0 X0) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(l1_msualg_1 \\ & X0))\wedge(((v1_relat_1 X1)\wedge((v4_relat_1 X1 (u1_struct_0 X0))\wedge((\\ & v1_funct_1 X1)\wedge(v1_partfun1 X1 (u1_struct_0 X0))))))\wedge(m2_pboole \\ & X2 (u4_struct_0 X0) (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 \\ & (u1_struct_0 X0) X1)) (k3_relat_1 (u2_msualg_1 X0) X1))))\Rightarrow((v3_msualg_1 \\ & (g3_msualg_1 X0 X1 X2) X0)\wedge(l3_msualg_1 (g3_msualg_1 X0 X1 X2) X0)) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
& \quad X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (\forall X2.(l3_msualg_1 \\
& X2 X0) \Rightarrow ((m1_msualg_2 X2 X0 X1) \Leftrightarrow ((m3_pboole (u3_msualg_1 X0 X2) \\
& \quad (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \wedge (\forall X3.(m3_pboole \\
& \quad X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \Rightarrow ((r8_pboole (u1_struct_0 \\
& X0) X3 (u3_msualg_1 X0 X2)) \Rightarrow ((v3_msualg_2 X3 X0 X1) \wedge (r8_pboole \\
& (u4_struct_0 X0) (u4_msualg_1 X0 X2) (k4_msualg_2 X0 X1 X3)))))))))) \\
& \hspace{15em} (11)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \wedge \\
& (l3_msualg_1 X1 X0) \Rightarrow ((v3_msualg_1 X1 X0) \Rightarrow (X1 = g3_msualg_1 X0 \\
& \quad (u3_msualg_1 X0 X1) (u4_msualg_1 X0 X1))) \\
& \hspace{15em} (12)
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
& \quad X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (\forall X2.(l3_msualg_1 \\
& X2 X0) \Rightarrow ((g3_msualg_1 X0 (u3_msualg_1 X0 X1) (u4_msualg_1 X0 X1) = \\
& g3_msualg_1 X0 (u3_msualg_1 X0 X2) (u4_msualg_1 X0 X2)) \Rightarrow (m1_msualg_2 \\
& \quad X1 X0 X2))))))
\end{aligned}$$