

t17_extens_1

(TMNcs8ZVTQ188j22qSVGCbj9E6dewynnYrq)

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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 $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k12_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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. Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\
 & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 \\
 & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\
 & (\forall X3. ((v1_relat_1 X3) \wedge ((v4_relat_1 X3 X0) \wedge ((v1_funct_1 \\
 & X3) \wedge (v1_partfun1 X3 X0)))) \Rightarrow (((r2_pboole X0 X1 X2) \wedge (r2_pboole \\
 & X0 X2 X3)) \Rightarrow (r2_pboole X0 X1 X3)))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((l1_struct_0 X0) \wedge (l2_msualg_1 X1 X0)) \Rightarrow \\
 & ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 \\
 & X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 \\
 & (u3_msualg_1 X0 X1) (u1_struct_0 X0))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\
 & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. (m3_pboole \\
 & X2 X0 X1) \Rightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge \\
 & (v1_partfun1 X2 X0))))))
 \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\wedge(l3_msualg_1 X1 X0))\Rightarrow(\forall X2.(m1_msualg_2 X2 X0 X1)\Rightarrow(l3_msualg_1 X2 X0)) \quad (4)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\Rightarrow(\forall X1.(l3_msualg_1 X1 X0)\Rightarrow(l2_msualg_1 X1 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1_msualg_1 X0)\Rightarrow(l5_struct_0 X0) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\wedge((l3_msualg_1 X1 X0)\wedge(m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1))))\Rightarrow((v3_msualg_1 (k12_msualg_2 X0 X1 X2) X0)\wedge(m1_msualg_2 (k12_msualg_2 X0 X1 X2) X0 X1)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 X2 X0))))\Rightarrow((m3_pboole X2 X0 X1)\Leftrightarrow(r2_pboole X0 X2 X1))) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\Rightarrow(\forall X1.(l3_msualg_1 X1 X0)\Rightarrow(\forall X2.(m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1))\Rightarrow(\forall X3.((v3_msualg_1 X3 X0)\wedge(m1_msualg_2 X3 X0 X1))\Rightarrow((X3 = k12_msualg_2 X0 X1 X2)\Leftrightarrow((m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X3))\wedge(\forall X4.(m1_msualg_2 X4 X0 X1)\Rightarrow((m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X4))\Rightarrow(m1_msualg_2 X3 X0 X4)))))))))) \quad (10)$$

Theorem 1

$$\forall X0.((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\Rightarrow(\forall X1.(l3_msualg_1 X1 X0)\Rightarrow(\forall X2.(m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1))\Rightarrow(\forall X3.(m3_pboole X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1))\Rightarrow((m3_pboole X2 (u1_struct_0 X0) X3)\Rightarrow(m1_msualg_2 (k12_msualg_2 X0 X1 X2) X0 (k12_msualg_2 X0 X1 X3))))))$$