

t19_osalg_2

(TMGzsYa1iKSAjwUXq2ym12JnUsiMsLGvBRd)

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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 $v12_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_osalg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_osalg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_osalg_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ 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 $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $m3_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_osalg_1 : \iota \Rightarrow o$ be given. Let $l2_osalg_1 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $v11_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ (\forall X3. ((v1_relat_1 X3) \wedge ((v4_relat_1 X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0)))) \Rightarrow (((r2_pboole X0 X1 X2) \wedge (r2_pboole X0 X2 X3)) \Rightarrow (r2_pboole X0 X1 X3)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ X0))) \Rightarrow (\forall X1.(l3_msualg_1 X1 X0) \Rightarrow (\forall X2.(m3_pboole \\ X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \Rightarrow (\forall X3.(m3_pboole \\ X3 (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \Rightarrow ((X3 \in k5_msualg_2 X0 X1 \\ X2) \Leftrightarrow ((v3_msualg_2 X3 X0 X1) \wedge ((r2_pboole (u1_struct_0 X0) (k2_msualg_2 \\ X0 X1) X3) \wedge (r2_pboole (u1_struct_0 X0) X2 X3))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ ((r2_pboole (u1_struct_0 X0) (k2_msualg_2 X0 X1) X2) \Rightarrow (r2_pboole \\ (u1_struct_0 X0) (k3_osalg_2 X0 X1) X2)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (r2_pboole (u1_struct_0 X0) (k2_msualg_2 \\ X0 X1) (k3_osalg_2 X0 X1))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\ X0) \wedge (l1_msualg_1 X0))) \wedge ((l3_msualg_1 X1 X0) \wedge (m3_pboole X2 (u1_struct_0 \\ X0) (u3_msualg_1 X0 X1)))) \Rightarrow (\neg v1_xboole_0 (k5_msualg_2 X0 X1 X2)) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((l1_struct_0 X0) \wedge (l2_msualg_1 X1 X0)) \Rightarrow \\ ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 \\ X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 \\ (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2.(m3_pboole \\ X2 X0 X1) \Rightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge \\ (v1_partfun1 X2 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\ ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge ((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ (m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l3_osalg_1 X0) \Rightarrow ((l1_osalg_1 X0) \wedge (l2_osalg_1 X0)) \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. (l3_msualg_1 X1 X0) \Rightarrow (l2_msualg_1 X1 X0)) \quad (12)$$

Assume the following.

$$\forall X0.(l2_osalg_1 X0) \Rightarrow ((l1_msualg_1 X0) \wedge (l1_orders_2 X0)) \quad (13)$$

Assume the following.

$$\forall X0.(l1_osalg_1 X0) \Rightarrow (l1_msualg_1 X0) \quad (14)$$

Assume the following.

$$\forall X0.(l1_orders_2 X0) \Rightarrow (l1_struct_0 X0) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge ((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (m2_osalg_2 (k3_osalg_2 X0 X1) X0 X1) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 X0))) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (m3_pboole (k2_msualg_2 X0 X1) (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \quad (17)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow (k5_osalg_2 X0 X1 X2 = \text{ReplSep} (\text{toset} (\lambda X3 : \iota.m1_subset_1 X3 (k5_msualg_2 X0 X1 X2)) (\lambda X3 : \iota.(v1_relat_1 X3) \wedge ((v4_relat_1 X3 (u1_struct_0 X0)) \wedge ((v1_funct_1 X3) \wedge ((v1_partfun1 X3 (u1_struct_0 X0)) \wedge (v11_osalg_1 X3 X0)))))) (\lambda X3 : \iota.X3)))) \quad (18)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1)) \Rightarrow ((m2_osalg_2 X2 X0 X1) \Leftrightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 (u1_struct_0 X0)) \wedge ((v1_funct_1 X2) \wedge ((v1_partfun1 X2 (u1_struct_0 X0)) \wedge (v11_osalg_1 X2 X0)))))))) \quad (19)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ & X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ & X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ & (\forall X3.(m2_osalg_2 X3 X0 X1) \Rightarrow ((X3 \in k5_osalg_2 X0 X1 X2) \Leftrightarrow ((\\ & v3_msualg_2 X3 X0 X1) \wedge ((r2_pboole (u1_struct_0 X0) (k3_osalg_2 \\ & X0 X1) X3) \wedge (r2_pboole (u1_struct_0 X0) X2 X3))))))) \end{aligned}$$