

t26_osalg_2 (TMKtTMPdLqEPJc-
PavforWTwGRJ1b2MEMffc)

October 27, 2020

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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ 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 $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k9_osalg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_setfam_1 : \iota \Rightarrow \iota$ 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 $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ 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 $l1_osalg_1 : \iota \Rightarrow o$ be given. Let $l2_osalg_1 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $k5_msualg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v11_osalg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_osalg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (r1_tarski (k1_setfam_1 X1) X0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & \quad X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (\forall X2. \\ & \quad (l3_msualg_1 X2 X0) \Rightarrow (\forall X3. (m3_pboole X3 (u1_struct_0 X0) \\ & \quad (u3_msualg_1 X0 X2)) \Rightarrow (\forall X4. (m3_pboole X4 (u1_struct_0 X0) \\ & \quad (u3_msualg_1 X0 X2)) \Rightarrow ((r2_pboole (u1_struct_0 X0) X3 X4) \Rightarrow (r1_tarski \\ & \quad (k1_funct_1 (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 (u1_struct_0 \\ & \quad X0) X3)) X1) (k1_funct_1 (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 \\ & \quad (u1_struct_0 X0) X4)) X1))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((l1_struct_0 X0) \wedge (l2_msualg_1 X1 X0)) \Rightarrow \\ & ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 \\ & X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 \\ & (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (\\ & (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\forall X2. (m3_pboole \\ & X2 X0 X1) \Rightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge \\ & (v1_partfun1 X2 X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\ & ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge ((v12_osalg_1 \\ & X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2. (m2_osalg_2 X2 X0 X1) \Rightarrow \\ & (m3_pboole X2 (u1_struct_0 X0) (u3_msualg_1 X0 X1))) \end{aligned} \quad (6)$$

Assume the following.

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

Assume the following.

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

Assume the following.

$$\forall X0. (l2_osalg_1 X0) \Rightarrow ((l1_msualg_1 X0) \wedge (l1_orders_2 X0)) \quad (9)$$

Assume the following.

$$\forall X0. (l1_osalg_1 X0) \Rightarrow (l1_msualg_1 X0) \quad (10)$$

Assume the following.

$$\forall X0. (l1_orders_2 X0) \Rightarrow (l1_struct_0 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\ & X0) \wedge ((v4_osalg_1 X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \wedge \\ & (((v12_osalg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \wedge (m2_osalg_2 X2 X0 X1)) \Rightarrow \\ & (m2_osalg_2 (k9_osalg_2 X0 X1 X2) X0 X1) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ (k5_osalg_2 X0 X1 X2 = ReplSep (toset (\lambda X3 : \iota.m1_subset_1 X3 \\ (k5_msualg_2 X0 X1 X2))) (\lambda X3 : \iota.(v1_relat_1 X3) \wedge ((v4_relat_1 \\ X3 (u1_struct_0 X0)) \wedge ((v1_funct_1 X3) \wedge ((v1_partfun1 X3 (u1_struct_0 \\ X0)) \wedge (v11_osalg_1 X3 X0)))))) (\lambda X3 : \iota.X3)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge \\ (v1_funct_1 X1) \wedge (v1_partfun1 X1 X0))) \Rightarrow (\forall X2.((v1_relat_1 \\ X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))) \Rightarrow \\ ((r2_pboole X0 X1 X2) \Leftrightarrow (\forall X3.(X3 \in X0) \Rightarrow (r1_tarski (k1_funct_1 \\ X1 X3) (k1_funct_1 X2 X3)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ (\forall X3.(m2_osalg_2 X3 X0 X1) \Rightarrow ((X3 = k9_osalg_2 X0 X1 X2) \Leftrightarrow (\forall X4. \\ (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (k1_funct_1 X3 X4 = k1_setfam_1 \\ (k8_osalg_2 X0 X1 X2 X4))))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m2_osalg_2 X2 X0 X1) \Rightarrow \\ (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(X4 = \\ k8_osalg_2 X0 X1 X2 X3) \Leftrightarrow (\forall X5.(X5 \in X4) \Leftrightarrow (\exists X6.(m2_osalg_2 \\ X6 X0 X1) \wedge ((X6 \in k5_osalg_2 X0 X1 X2) \wedge (X5 = k1_funct_1 X6 X3))))))) \end{aligned} \quad (16)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v4_osalg_1 \\ X0) \wedge ((v5_osalg_1 X0) \wedge (l3_osalg_1 X0)))))) \Rightarrow (\forall X1.((v12_osalg_1 \\ X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u4_struct_0 \\ X0)) \Rightarrow (\forall X3.(m2_osalg_2 X3 X0 X1) \Rightarrow (\forall X4.(m2_osalg_2 \\ X4 X0 X1) \Rightarrow ((X4 \in k5_osalg_2 X0 X1 X3) \Rightarrow (r1_tarski (k1_funct_1 (k3_relat_1 \\ (u1_msualg_1 X0) (k6_finseq_2 (u1_struct_0 X0) (k9_osalg_2 X0 \\ X1 X3))) X2) (k1_funct_1 (k3_relat_1 (u1_msualg_1 X0) (k6_finseq_2 \\ (u1_struct_0 X0) X4) X2))))))) \end{aligned}$$