

t18_msaterm
(TMZRzmKsz3V7oELyHTuwDBDE8HMCgECCbdt)

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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 $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_msaterm : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_msaterm : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_dtconstr : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_msafree : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_trees_3 : \iota \Rightarrow \iota$ be given. Let $k1_msaterm : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_trees_4 : \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $k2_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ 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.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 X0))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 X1 (u1_struct_0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 X0)))))) \Rightarrow (\forall X2. (l3_msualg_1 X2 X0) \Rightarrow (\forall X3. (m1_dtconstr X3 (u1_struct_0 (k5_msafree X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X2) X1))) (k5_trees_3 (u1_struct_0 (k5_msafree X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X2) X1)))) (k1_msaterm X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X2) X1)))) \Rightarrow (\forall X4. (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5. ((X5 \in k1_funct_1 (u3_msualg_1 X0 X2) X4) \wedge (X3 = k1_trees_4 (k4_tarski X5 X4))) \Rightarrow (k7_msaterm X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X2) X1) X3 = X4)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))))) \wedge (m1_subset_1 X2 X0)) \Rightarrow (\neg v1_xboole_0 (k1_funct_1 X1 X2)) \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. ((l1_struct_0 X0) \wedge ((v4_msualg_1 X1 X0) \wedge (l2_msualg_1 X1 X0))) \Rightarrow ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v2_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 (u3_msualg_1 X0 X1) (u1_struct_0 X0))))))) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. ((l1_struct_0 X0) \wedge (l2_msualg_1 X1 X0)) \Rightarrow ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 X0 X1) (u1_struct_0 X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \quad (6)$$

Assume the following.

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

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. (l3_msualg_1 X1 X0) \Rightarrow (l2_msualg_1 X1 X0)) \quad (8)$$

Assume the following.

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

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 X0))) \wedge (((v4_msualg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \wedge (((v1_relat_1 X2) \wedge ((v2_relat_1 X2) \wedge ((v4_relat_1 X2 (u1_struct_0 X0)) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 (u1_struct_0 X0)))))) \wedge ((m1_subset_1 X3 (u1_struct_0 X0)) \wedge (m1_subset_1 X4 (k1_funct_1 (u3_msualg_1 X0 X1) X3)))))) \Rightarrow (m1_dtconstr (k4_msaterm X0 X1 X2 X3 X4) (u1_struct_0 (k5_msafree X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X1) X2))) (k5_trees_3 (u1_struct_0 (k5_msafree X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X1) X2)))) (k1_msaterm X0 (k2_pboole (u1_struct_0 X0) (u3_msualg_1 X0 X1) X2))) \quad (10)$$

Assume the following.

$$\forall X0. \forall X1. k4_tarski\ X0\ X1 = k2_tarski\ (k2_tarski\ X0\ X1)\ (k1_tarski\ X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0\ X0) \wedge ((\neg v11_struct_0\ X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v4_msualg_1\ X1\ X0) \wedge (l3_msualg_1\ X1\ X0)) \Rightarrow \\ & (\forall X2. ((v1_relat_1\ X2) \wedge ((v2_relat_1\ X2) \wedge ((v4_relat_1 \\ & X2\ (u1_struct_0\ X0)) \wedge ((v1_funct_1\ X2) \wedge (v1_partfun1\ X2\ (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X3. (m1_subset_1\ X3\ (u1_struct_0\ X0)) \Rightarrow (\forall X4. \\ & (m1_subset_1\ X4\ (k1_funct_1\ (u3_msualg_1\ X0\ X1)\ X3)) \Rightarrow (k4_msaterm \\ & X0\ X1\ X2\ X3\ X4 = k1_trees_4\ (k4_tarski\ X4\ X3)))))) \end{aligned} \quad (12)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0\ X0) \wedge ((\neg v11_struct_0\ X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v1_relat_1\ X1) \wedge ((v2_relat_1\ X1) \wedge ((v4_relat_1 \\ & X1\ (u1_struct_0\ X0)) \wedge ((v1_funct_1\ X1) \wedge (v1_partfun1\ X1\ (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X2. ((v4_msualg_1\ X2\ X0) \wedge (l3_msualg_1\ X2\ X0)) \Rightarrow \\ & (\forall X3. (m1_subset_1\ X3\ (u1_struct_0\ X0)) \Rightarrow (\forall X4. (m1_subset_1 \\ & X4\ (k1_funct_1\ (u3_msualg_1\ X0\ X2)\ X3)) \Rightarrow (k7_msaterm\ X0\ (k2_pboole \\ & (u1_struct_0\ X0)\ (u3_msualg_1\ X0\ X2)\ X1)\ (k4_msaterm\ X0\ X2\ X1\ X3\ X4) = \\ & X3)))))) \end{aligned}$$