

t4_msaterm (TMLteXh- STM1FspUEGtrGjtTQ7dhwGyBdUnR)

October 27, 2020

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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_dtconstr : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_trees_4 : \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_lang1 : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_dtconstr : \iota \Rightarrow o$ be given. Let $l1_lang1 : \iota \Rightarrow o$ be given. Let $k6_dtconstr : \iota \Rightarrow \iota$ be given. Let $k8_dtconstr : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_dtconstr : \iota \Rightarrow o$ be given. Let $v3_dtconstr : \iota \Rightarrow o$ be given. Let $v1_lang1 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $k4_dtconstr : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\
& X0))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 (u1_struct_0 \\
& X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 X0)))))) \Rightarrow \\
& (\forall X2. (\neg (X2 \in k1_lang1 (k5_msafree X0 X1)) \wedge ((v2_relat_1 \\
& X1) \wedge (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4. \\
& \neg (X4 \in k1_funct_1 X1 X3) \wedge (X2 = k4_tarski X4 X3)))))) \wedge (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4. (X4 \in k1_funct_1 \\
& X1 X3) \Rightarrow (k4_tarski X4 X3 \in k1_lang1 (k5_msafree X0 X1))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v1_dtconstr X0)\wedge(l1_lang1 X0)))\wedge(m1_subset_1 X1 (k6_dtconstr X0)))\Rightarrow(k8_dtconstr X0 X1 = k1_trees_4 X1) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge((v1_dtconstr X0)\wedge(l1_lang1 X0)))\Rightarrow(k6_dtconstr X0 = k1_lang1 X0) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\wedge((v1_relat_1 X1)\wedge((v2_relat_1 X1)\wedge((v4_relat_1 X1 (u1_struct_0 X0))\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 (u1_struct_0 X0)))))))\Rightarrow((v1_dtconstr (k5_msafree X0 X1))\wedge((v2_dtconstr (k5_msafree X0 X1))\wedge(v3_dtconstr (k5_msafree X0 X1)))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge(l1_msualg_1 X0)))\wedge((v1_relat_1 X1)\wedge((v4_relat_1 X1 (u1_struct_0 X0))\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 (u1_struct_0 X0)))))))\Rightarrow((\neg v2_struct_0 (k5_msafree X0 X1))\wedge(v1_lang1 (k5_msafree X0 X1))) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge(((v1_relat_1 X1)\wedge((v2_relat_1 X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))))\wedge(m1_subset_1 X2 X0)))\Rightarrow(\neg v1_xboole_0 (k1_funct_1 X1 X2)) \quad (9)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (10)$$

Assume the following.

$$\forall X0.(l1_msualg_1 X0)\Rightarrow(l5_struct_0 X0) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge((v1_dtconstr X0)\wedge(l1_lang1 X0)))\wedge(m1_subset_1 X1 (k6_dtconstr X0)))\Rightarrow(m1_dtconstr (k8_dtconstr X0 X1) (u1_struct_0 X0) (k5_trees_3 (u1_struct_0 X0)) (k4_dtconstr X0)) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge \\ & (l1_msualg_1 X0)) \wedge ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 (u1_struct_0 \\ & X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 X0)))))) \Rightarrow \\ & (l1_lang1 (k5_msafree X0 X1)) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & X0)) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 (u1_struct_0 \\ & X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 X0)))))) \Rightarrow \\ & (k1_msaterm X0 X1 = k4_dtconstr (k5_msafree X0 X1)) \end{aligned} \quad (14)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ & X0)) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 (u1_struct_0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 (k1_funct_1 X1 X2)) \Rightarrow (m1_dtconstr (k1_trees_4 \\ & (k4_tarski X3 X2) (u1_struct_0 (k5_msafree X0 X1)) (k5_trees_3 \\ & (u1_struct_0 (k5_msafree X0 X1))) (k1_msaterm X0 X1)))))) \end{aligned}$$