

t10_pralg_3

(TMRADHbkqi3ui3PMDUk2GjSizRqt8TpiJ7r)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. 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 $m1_pralg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k1_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_pralg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_pralg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_pralg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_tarski : \iota \Rightarrow \iota$ be given. Let $k4_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge \\ & ((\neg v11_struct_0 X1) \wedge (l1_msualg_1 X1))) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 X0) \Rightarrow (\forall X3. (m1_pralg_2 X3 X0 X1) \Rightarrow (\forall X4. (m1_subset_1 \\ & X4 (u4_struct_0 X1)) \Rightarrow ((k1_msualg_1 X1 X4 = k1_xboole_0) \Rightarrow (k1_funct_1 \\ & (k1_pralg_3 X1 (k14_pralg_2 X0 X1 X3) X4) X2 = k1_pralg_3 X1 (k5_pralg_2 \\ & X0 X1 X3 X2) X4)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge \\ & ((\neg v11_struct_0 X1) \wedge (l1_msualg_1 X1))) \Rightarrow (\forall X2. (m1_pralg_2 \\ & X2 X0 X1) \Rightarrow (\forall X3. (m1_subset_1 X3 (u4_struct_0 X1)) \Rightarrow ((k1_msualg_1 \\ & X1 X3 = k1_xboole_0) \Rightarrow (k1_pralg_3 X1 (k14_pralg_2 X0 X1 X2) X3 \in k1_funct_2 \\ & X0 (k3_tarski (ReplSep (toset (\lambda X4 : \iota. m1_subset_1 X4 X0)) \\ & (\lambda X4 : \iota. True) (\lambda X4 : \iota. k4_msualg_1 X1 X3 (k5_pralg_2 \\ & X0 X1 X2 X4)))))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. ((\\ & v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (((k9_xtuple_0 X0 = k9_xtuple_0 \\ & X1) \wedge (\forall X2. (X2 \in k9_xtuple_0 X0) \Rightarrow (k1_funct_1 X0 X2 = k1_funct_1 \\ & X1 X2))) \Rightarrow (X0 = X1))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 X0))) \wedge ((\neg v1_xboole_0 \\ & X1) \wedge ((m1_subset_1 X2 (u4_struct_0 X0)) \wedge (m1_pralg_2 X3 X1 X0)))) \Rightarrow \\ & ((v1_relat_1 (k1_pralg_3 X0 (k14_pralg_2 X1 X0 X3) X2)) \wedge (v1_funct_1 \\ & (k1_pralg_3 X0 (k14_pralg_2 X1 X0 X3) X2))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(X2 = k1_funct_2 X0 X1) \Leftrightarrow (\forall X3. \\ & (X3 \in X2) \Leftrightarrow (\exists X4.((v1_relat_1 X4) \wedge (v1_funct_1 X4)) \wedge ((X3 = \\ & X4) \wedge ((k9_xtuple_0 X4 = X0) \wedge (r1_tarski (k10_xtuple_0 X4) X1)))))) \end{aligned} \quad (6)$$

Theorem 1

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge \\ & ((\neg v11_struct_0 X1) \wedge (l1_msualg_1 X1))) \Rightarrow (\forall X2.(m1_pralg_2 \\ & X2 X0 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (u4_struct_0 X1)) \Rightarrow (\forall X4. \\ & ((v1_relat_1 X4) \wedge (v1_funct_1 X4)) \Rightarrow (((k1_msualg_1 X1 X3 = k1_xboole_0) \wedge \\ & ((k9_xtuple_0 X4 = X0) \wedge (\forall X5.(m1_subset_1 X5 X0) \Rightarrow (k1_funct_1 \\ & X4 X5 = k1_pralg_3 X1 (k5_pralg_2 X0 X1 X2 X5) X3)))))) \Rightarrow (X4 = k1_pralg_3 \\ & X1 (k14_pralg_2 X0 X1 X2) X3)))))) \end{aligned}$$