

t14_msualg_9

(TMcR6uyWNqrpEpSU2YGwosYteY71Xt2M4aP)

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 $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_pralg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $k9_pralg_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12_card_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $v4_funct_1 : \iota \Rightarrow o$ be given. Let $v5_funct_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow ((X0 \in k4_card_3 X1) \Leftrightarrow ((k9_xtuple_0 \\ X0 = k9_xtuple_0 X1) \wedge (\forall X2.(X2 \in k9_xtuple_0 X1) \Rightarrow (k1_funct_1 \\ X0 X2 \in k1_funct_1 X1 X2)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((X0 \in X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 X2))) \Rightarrow (m1_subset_1 X0 X2) \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (((k9_xtuple_0 X0 = k9_xtuple_0 \\ X1) \wedge (\forall X2.(X2 \in k9_xtuple_0 X0) \Rightarrow (k1_funct_1 X0 X2 = k1_funct_1 \\ X1 X2))) \Rightarrow (X0 = X1))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge(((v1_relat_1 \\ & X1)\wedge((v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge(v1_partfun1 X1 X0))))\wedge \\ & ((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 X2)\wedge(v1_partfun1 \\ & X2 X0))))))\Rightarrow((r8_pboole X0 X1 X2)\Leftrightarrow(X1 = X2)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge(v4_relat_1 X1 X0))\Rightarrow(k1_relset_1 X0 X1 = k9_xtuple_0 X1) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X1)\wedge(l1_msualg_1 X1))\wedge((m1_subset_1 X2 (u1_struct_0 X1))\wedge(m1_pralg_2 \\ & X3 X0 X1)))\Rightarrow((v1_relat_1 (k9_pralg_2 X0 X1 X2 X3))\wedge((v2_relat_1 \\ & (k9_pralg_2 X0 X1 X2 X3))\wedge((v4_relat_1 (k9_pralg_2 X0 X1 X2 X3) X0)\wedge \\ & ((v1_funct_1 (k9_pralg_2 X0 X1 X2 X3))\wedge(v1_partfun1 (k9_pralg_2 \\ & X0 X1 X2 X3) X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge((v2_relat_1 X0)\wedge(v1_funct_1 X0)))\Rightarrow(\neg v1_xboole_0 (k4_card_3 X0)) \quad (8)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow(v4_funct_1 (k4_card_3 X0)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X1)\wedge(v4_relat_1 X1 X0))\Rightarrow(m1_subset_1 (k1_relset_1 X0 X1) (k1_zfmisc_1 X0)) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow((v1_relat_1 (k12_card_3 X0 X1))\wedge(v1_funct_1 (k12_card_3 X0 X1))) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow(\forall X1.\forall X2. \\ & ((v1_relat_1 X2)\wedge(v1_funct_1 X2))\Rightarrow((X2 = k12_card_3 X0 X1)\Leftrightarrow((\\ & k9_xtuple_0 X2 = k4_card_3 X0)\wedge(\forall X3.((v1_relat_1 X3)\wedge(\\ & v1_funct_1 X3))\Rightarrow((X3 \in k9_xtuple_0 X2)\Rightarrow(k1_funct_1 X2 X3 = k1_funct_1 \\ & X3 X1)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge ((v2_relat_1 X0) \wedge (v1_funct_1 X0))) \Rightarrow \\ (\forall X1.(m1_subset_1 X1 (k4_card_3 X0)) \Rightarrow (v5_funct_1 X1 X0)) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(v4_funct_1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 X0) \Rightarrow (v1_relat_1 X1) \wedge (v1_funct_1 X1)) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))))) \Rightarrow (\forall X2. \\ (m1_subset_1 X2 (k4_card_3 X1)) \Rightarrow (v1_partfun1 X2 X0)) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 X0) \wedge (\\ v1_funct_1 X1))) \Rightarrow (\forall X2. ((v1_relat_1 X2) \wedge ((v1_funct_1 \\ X2) \wedge (v5_funct_1 X2 X1))) \Rightarrow ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge \\ (v1_funct_1 X2)))) \end{aligned} \quad (16)$$

Theorem 1

$$\begin{aligned} \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_msualg_1 \\ X0))) \Rightarrow (\forall X1. (\neg v1_xboole_0 X1) \Rightarrow (\forall X2. (m1_subset_1 \\ X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. (m1_pralg_2 X3 X1 X0) \Rightarrow (\forall X4. \\ (m1_subset_1 X4 (k4_card_3 (k9_pralg_2 X1 X0 X2 X3))) \Rightarrow (\forall X5. \\ (m1_subset_1 X5 (k4_card_3 (k9_pralg_2 X1 X0 X2 X3))) \Rightarrow ((\forall X6. \\ (m1_subset_1 X6 X1) \Rightarrow (k1_funct_1 (k12_card_3 (k9_pralg_2 X1 X0 \\ X2 X3) X6) X4 = k1_funct_1 (k12_card_3 (k9_pralg_2 X1 X0 X2 X3) X6) \\ X5)) \Rightarrow (r8_pboole X1 X4 X5)))))))))) \end{aligned}$$