

t44_cat_3

(TMTxssfUj1FTczw81hp7fJiLJcVXbWcFXr4)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v2_cat_1 : \iota \Rightarrow o$ be given. Let $v3_cat_1 : \iota \Rightarrow o$ be given. Let $v4_cat_1 : \iota \Rightarrow o$ be given. Let $v5_cat_1 : \iota \Rightarrow o$ be given. Let $v6_cat_1 : \iota \Rightarrow o$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k8_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 \\ & X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 \\ & X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 X2)))))))) \Rightarrow (\forall X3. (m1_subset_1 \\ & X3 (u4_struct_0 X2)) \Rightarrow (\forall X4. (m1_subset_1 X4 (u4_struct_0 \\ & X2)) \Rightarrow (r2_funct_2 (k2_tarski X0 X1) (u1_struct_0 X2) (k2_cat_3 \\ & X2 (k2_tarski X0 X1) (k5_funct_4 (u4_struct_0 X2) X0 X1 X3 X4)) (k5_funct_4 \\ & (u1_struct_0 X2) X0 X1 (k3_graph_1 X2 X3) (k3_graph_1 X2 X4)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. k4_funct_4 X0 X1 X2 X2 = k7_funcop_1 (k2_tarski X0 X1) X2 \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X2)\wedge \\ & ((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1))))\wedge((v1_funct_1 X3)\wedge((v1_funct_2 X3 X0 X1)\wedge(m1_subset_1 \\ & X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))))))\Rightarrow((r2_funct_2 X0 X1 X2 \\ & X3)\Leftrightarrow(X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge(m1_subset_1 X2 X0))\Rightarrow(k8_funcop_1 X0 X1 X2 = k2_funcop_1 X1 X2) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.k7_funcop_1 X0 X1 = k2_funcop_1 X0 X1 \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X0)\wedge((m1_subset_1 X3 X0)\wedge(m1_subset_1 X4 X0)))\Rightarrow(k5_funct_4 X0 \\ & X1 X2 X3 X4 = k4_funct_4 X1 X2 X3 X4) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v11_struct_0 X0)\wedge(l5_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u4_struct_0 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (9)$$

Assume the following.

$$\forall X0.(l1_graph_1 X0)\Rightarrow(l5_struct_0 X0) \quad (10)$$

Assume the following.

$$\forall X0.(l1_cat_1 X0)\Rightarrow(l1_graph_1 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge(m1_subset_1 \\ & X2 X0))\Rightarrow(((v1_funct_1 (k8_funcop_1 X0 X1 X2))\wedge((v1_funct_2 (k8_funcop_1 \\ & X0 X1 X2) X1 X0)\wedge(m1_subset_1 (k8_funcop_1 X0 X1 X2) (k1_zfmisc_1 \\ & (k2_zfmisc_1 X1 X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X0)\wedge((m1_subset_1 X3 X0)\wedge(m1_subset_1 X4 X0)))\Rightarrow((v1_funct_1 \\ & (k5_funct_4 X0 X1 X2 X3 X4))\wedge((v1_funct_2 (k5_funct_4 X0 X1 X2 X3 \\ & X4) (k2_tarski X1 X2) X0)\wedge(m1_subset_1 (k5_funct_4 X0 X1 X2 X3 X4) \\ & (k1_zfmisc_1 (k2_zfmisc_1 (k2_tarski X1 X2) X0)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 \\ & X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 \\ & X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge((v1_funct_1 X2)\wedge(\\ & (v1_funct_2 X2 X1 (u4_struct_0 X0))\wedge(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X1 (u4_struct_0 X0))))))\Rightarrow((v1_funct_1 (k2_cat_3 \\ & X0 X1 X2))\wedge((v1_funct_2 (k2_cat_3 X0 X1 X2) X1 (u1_struct_0 X0))\wedge \\ & (m1_subset_1 (k2_cat_3 X0 X1 X2) (k1_zfmisc_1 (k2_zfmisc_1 X1 (\\ & u1_struct_0 X0)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ & X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ & X0)\wedge(l1_cat_1 X0))))))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0))\Rightarrow(\forall X2.\forall X3.((v1_funct_1 X3)\wedge((v1_funct_2 X3 \\ & X2 (u4_struct_0 X0))\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X2 (u4_struct_0 X0))))))\Rightarrow((m1_cat_3 X3 X0 X1 X2)\Leftrightarrow(r2_funct_2 X2 \\ & (u1_struct_0 X0) (k2_cat_3 X0 X2 X3) (k8_funcop_1 (u1_struct_0 \\ & X0) X2 X1)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.k2_tarski X0 X1 = k2_tarski X1 X0 \quad (16)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v2_struct_0 X2)\wedge((\neg v11_struct_0 \\ & X2)\wedge((v2_cat_1 X2)\wedge((v3_cat_1 X2)\wedge((v4_cat_1 X2)\wedge((v5_cat_1 \\ & X2)\wedge((v6_cat_1 X2)\wedge(l1_cat_1 X2))))))))\Rightarrow(\forall X3.(m1_subset_1 \\ & X3 (u1_struct_0 X2))\Rightarrow(\forall X4.(m1_subset_1 X4 (u4_struct_0 \\ & X2))\Rightarrow(\forall X5.(m1_subset_1 X5 (u4_struct_0 X2))\Rightarrow(((k3_graph_1 \\ & X2 X4 = X3)\wedge(k3_graph_1 X2 X5 = X3))\Rightarrow(m1_cat_3 (k5_funct_4 (u4_struct_0 \\ & X2) X0 X1 X4 X5) X2 X3 (k2_tarski X0 X1)))))) \end{aligned}$$