

t51_cat_4

(TMc24YstaUJ2gHHEpgaApHNLiRzezn8UGn8)

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Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k23_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v11_cat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. 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 $v5_cat_4 : \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l2_cat_4 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. \neg(X0 \in X1) \wedge (v1_xboole_0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (u1_struct_0 \\ (k23_cat_4 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 \\ (k23_cat_4 X0 X1))) \Rightarrow (\forall X4. (m1_subset_1 X4 (u4_struct_0 \\ (k23_cat_4 X0 X1))) \Rightarrow (X4 \in k2_cat_1 (k23_cat_4 X0 X1) X2 X3))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (u4_struct_0 \\ (k23_cat_4 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 X3 (u4_struct_0 \\ (k23_cat_4 X0 X1))) \Rightarrow (X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (\neg v2_struct_0 (k23_cat_4 X0 X1)) \wedge ((\neg v11_struct_0 \\ (k23_cat_4 X0 X1)) \wedge ((v2_cat_1 (k23_cat_4 X0 X1)) \wedge ((v3_cat_1 (\\ k23_cat_4 X0 X1)) \wedge ((v4_cat_1 (k23_cat_4 X0 X1)) \wedge ((v5_cat_1 (k23_cat_4 \\ X0 X1)) \wedge ((v6_cat_1 (k23_cat_4 X0 X1)) \wedge (v5_cat_4 (k23_cat_4 X0 \\ X1)))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$v1_xboole_0 k1_xboole_0 \quad (5)$$

Assume the following.

$$\forall X0.\exists X1.m1_subset_1 X1 X0 \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 \\ X0)\wedge(l1_cat_1 X0)))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(m1_subset_1 \\ X2 (u1_struct_0 X0))))\Rightarrow(\exists X3.m1_cat_1 X3 X0 X1 X2) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 \\ X0)\wedge(l1_cat_1 X0)))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(m1_subset_1 \\ X2 (u1_struct_0 X0))))\Rightarrow(\forall X3.(m1_cat_1 X3 X0 X1 X2)\Rightarrow(m1_subset_1 \\ X3 (u4_struct_0 X0))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(l2_cat_4 X0)\Rightarrow(l1_cat_1 X0) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(v5_cat_4 (k23_cat_4 X0 X1))\wedge(l2_cat_4 (k23_cat_4 X0 X1)) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ X0)\wedge(l1_cat_1 X0))))))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ X0))\Rightarrow((v11_cat_1 X1 X0)\Leftrightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ X0))\Rightarrow((k2_cat_1 X0 X1 X2\neq k1.xboole_0)\wedge(\exists X3.(m1_cat_1 \\ X3 X0 X1 X2)\wedge(\forall X4.(m1_cat_1 X4 X0 X1 X2)\Rightarrow(X3 = X4))))))) \end{aligned} \quad (11)$$

Theorem 1

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (u1_struct_0 (k23_cat_4 X0 X1)))\Rightarrow(v11_cat_1 X2 (k23_cat_4 X0 X1))$$