

t53_cat_4

(TMbcf6xjdhwsy2eBq5B5y1MJqhw2BsnFBpt)

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Let $v6_cat_4 : \iota \Rightarrow o$ be given. Let $k23_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $r4_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v11_cat_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $l2_cat_4 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $u8_cat_4 : \iota \Rightarrow \iota$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $u7_cat_4 : \iota \Rightarrow \iota$ be given. Let $u6_cat_4 : \iota \Rightarrow \iota$ be given. Let $u5_cat_4 : \iota \Rightarrow \iota$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (u1_struct_0 \\ & (k23_cat_4 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 X3 (u4_struct_0 \\ & (k23_cat_4 X0 X1))) \Rightarrow (\forall X4. (m1_subset_1 X4 (u4_struct_0 \\ & (k23_cat_4 X0 X1))) \Rightarrow (r4_cat_3 (k23_cat_4 X0 X1) X2 X3 X4))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (u1_struct_0 (k23_cat_4 X0 X1))) \Rightarrow (v11_cat_1 X2 (k23_cat_4 X0 X1)) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (u1_struct_0 \\ & (k23_cat_4 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 \\ & (k23_cat_4 X0 X1))) \Rightarrow (X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

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

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (5)$$

Assume the following.

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

Assume the following.

$$\forall X0.(l2_cat_4 X0)\Rightarrow((v1_funct_1 (u8_cat_4 X0))\wedge((v1_funct_2 (u8_cat_4 X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u4_struct_0 X0))\wedge(m1_subset_1 (u8_cat_4 X0) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u4_struct_0 X0)))))) \quad (7)$$

Assume the following.

$$\forall X0.(l2_cat_4 X0)\Rightarrow((v1_funct_1 (u7_cat_4 X0))\wedge((v1_funct_2 (u7_cat_4 X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u4_struct_0 X0))\wedge(m1_subset_1 (u7_cat_4 X0) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u4_struct_0 X0)))))) \quad (8)$$

Assume the following.

$$\forall X0.(l2_cat_4 X0)\Rightarrow((v1_funct_1 (u6_cat_4 X0))\wedge((v1_funct_2 (u6_cat_4 X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0))\wedge(m1_subset_1 (u6_cat_4 X0) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 X0)))))) \quad (9)$$

Assume the following.

$$\forall X0.(l2_cat_4 X0)\Rightarrow(m1_subset_1 (u5_cat_4 X0) (u1_struct_0 X0)) \quad (10)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (11)$$

Assume the following.

$$\forall X0.(l2_cat_4 X0) \Rightarrow (l1_cat_1 X0) \quad (12)$$

Assume the following.

$$\forall X0.(l1_graph_1 X0) \Rightarrow (l5_struct_0 X0) \quad (13)$$

Assume the following.

$$\forall X0.(l1_cat_1 X0) \Rightarrow (l1_graph_1 X0) \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X1) \wedge \\ & ((v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \wedge ((m1_subset_1 X2 X0) \wedge \\ & (m1_subset_1 X3 X0))) \Rightarrow (m1_subset_1 (k5_binop_1 X0 X1 X2 X3) X0) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\ & (l1_graph_1 X0))) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (m1_subset_1 \\ & (k3_graph_1 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\ & (((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge (((v1_funct_1 X3) \wedge ((\\ & v1_funct_2 X3 (k2_zfmisc_1 X0 X1) X2) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X1) X2)))) \wedge ((m1_subset_1 X4 X0) \wedge \\ & (m1_subset_1 X5 X1)))))) \Rightarrow (m1_subset_1 (k2_binop_1 X0 X1 X2 X3 X4 \\ & X5) X2) \end{aligned} \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.(v5_cat_4 (k23_cat_4 X0 X1)) \wedge (l2_cat_4 (k23_cat_4 X0 X1)) \quad (18)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l2_cat_4 X0)))))) \Rightarrow ((v6_cat_4 X0) \Leftrightarrow ((v11_cat_1 (u5_cat_4 \\
& X0) X0) \wedge (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow ((k3_graph_1 X0 (k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u4_struct_0 X0) (u7_cat_4 X0) \\
& X1 X2) = X1) \wedge ((k3_graph_1 X0 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0) (u4_struct_0 X0) (u8_cat_4 X0) X1 X2) = X2) \wedge (r4_cat_3 X0 (k5_binop_1 \\
& (u1_struct_0 X0) (u6_cat_4 X0) X1 X2) (k2_binop_1 (u1_struct_0 \\
& X0) (u1_struct_0 X0) (u4_struct_0 X0) (u7_cat_4 X0) X1 X2) (k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u4_struct_0 X0) (u8_cat_4 X0) \\
& X1 X2))))))))))
\end{aligned} \tag{19}$$

Theorem 1 $\forall X0. \forall X1. v6_cat_4 (k23_cat_4 X0 X1)$.