

t35_cat_4

(TMGkXEX55VHyThp1xcAUud9QYhg9QbqRGHg)

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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 $v3_cat_4 : \iota \Rightarrow o$ be given. Let $l1_cat_4 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k9_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k15_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $k4_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\ & (m1_cat_1 X3 X0 X1 X2) \Rightarrow ((k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \Rightarrow (k5_cat_1 \\ & X0 X1 X2 X2 X3 (k4_cat_1 X0 X2) = X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge ((v3_cat_4 X0) \wedge (l1_cat_4 X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4. \\ & (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5.(m1_cat_1 X5 X0 \\ & X1 X2) \Rightarrow (\forall X6.(m1_cat_1 X6 X0 X1 X3) \Rightarrow (\forall X7.(m1_cat_1 \\ & X7 X0 X4 X1) \Rightarrow (\neg (k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \wedge ((k2_cat_1 X0 X1 \\ & X3 \neq k1_xboole_0) \wedge ((k2_cat_1 X0 X4 X1 \neq k1_xboole_0) \wedge (k9_cat_4 \\ & X0 X2 X3 X4 (k5_cat_1 X0 X4 X1 X2 X7 X5) (k5_cat_1 X0 X4 X1 X3 X7 X6) \neq k5_cat_1 \\ & X0 X4 X1 (k2_cat_4 X0 X2 X3) X7 (k9_cat_4 X0 X2 X3 X1 X5 X6)))))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge((v5_cat_1 X0)\wedge(l1_cat_1 X0))))\wedge(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (k2_cat_1 X0 X1 X1)) \quad (3)$$

Assume the following.

$$v1_xboole_0 k1_xboole_0 \quad (4)$$

Assume the following.

$$\forall X0.(l1_cat_4 X0)\Rightarrow(l1_cat_1 X0) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))\wedge(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(m1_cat_1 (k4_cat_1 X0 X1) X0 X1 X1) \quad (6)$$

Assume the following.

$$\forall X0.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge((v3_cat_4 X0)\wedge(l1_cat_4 X0))))))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(k15_cat_4 X0 X1 = k9_cat_4 X0 X1 X1 X1 (k4_cat_1 X0 X1) (k4_cat_1 X0 X1))) \quad (7)$$

Theorem 1

$$\forall X0.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge((v3_cat_4 X0)\wedge(l1_cat_4 X0))))))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_cat_1 X3 X0 X1 X2)\Rightarrow((k2_cat_1 X0 X1 X2\neq k1_xboole_0)\Rightarrow(k9_cat_4 X0 X2 X2 X1 X3 X3 = k5_cat_1 X0 X1 X2 (k2_cat_4 X0 X2 X2) X3 (k15_cat_4 X0 X2))))))$$