

t33_cat_2

(TMaa34DfzZoqxaW4scGMLx9aU7P63ydRV5p)

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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 $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k10_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_cat_1 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_cat_1 X3 X0 \\ & X1 X2) \Rightarrow ((k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \Rightarrow ((k3_graph_1 X0 X3 = X1) \wedge \\ & (k4_graph_1 X0 X3 = X2)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_cat_1 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (m1_cat_1 \\ & X1 X0 (k3_graph_1 X0 X1) (k4_graph_1 X0 X1))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\ & \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))))) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u4_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ & (u4_struct_0 X1)) \Rightarrow ((k3_graph_1 (k8_cat_2 X0 X1) (k10_cat_2 X0 \\ & X1 X2 X3) = k9_cat_2 X0 X1 (k3_graph_1 X0 X2) (k3_graph_1 X1 X3)) \wedge (\\ & k4_graph_1 (k8_cat_2 X0 X1) (k10_cat_2 X0 X1 X2 X3) = k9_cat_2 X0 X1 \\ & (k4_graph_1 X0 X2) (k4_graph_1 X1 X3)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 \\ & X0)\wedge(l1_cat_1 X0))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(m1_subset_1 \\ & X2 (u1_struct_0 X0))))\Rightarrow(\forall X3.(m1_cat_1 X3 X0 X1 X2)\Rightarrow(m1_subset_1 \\ & X3 (u4_struct_0 X0))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge \\ & ((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge \\ & ((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge((\neg v2_struct_0 X1)\wedge(\neg \\ & v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 X1)\wedge \\ & ((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))))\Rightarrow((\neg v2_struct_0 \\ & (k8_cat_2 X0 X1))\wedge(\neg v11_struct_0 (k8_cat_2 X0 X1))\wedge((v2_cat_1 \\ & (k8_cat_2 X0 X1))\wedge((v3_cat_1 (k8_cat_2 X0 X1))\wedge((v4_cat_1 (k8_cat_2 \\ & X0 X1))\wedge((v5_cat_1 (k8_cat_2 X0 X1))\wedge((v6_cat_1 (k8_cat_2 X0 X1))\wedge \\ & (l1_cat_1 (k8_cat_2 X0 X1)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0)\wedge(\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 \\ & X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge(((\\ & \neg v2_struct_0 X1)\wedge(\neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 \\ & X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 \\ & X1))))))))\wedge((m1_subset_1 X2 (u4_struct_0 X0))\wedge(m1_subset_1 \\ & X3 (u4_struct_0 X1))))\Rightarrow(m1_subset_1 (k10_cat_2 X0 X1 X2 X3) (u4_struct_0 \\ & (k8_cat_2 X0 X1))) \end{aligned} \quad (6)$$

Theorem 1

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ & X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ & X0)\wedge(l1_cat_1 X0))))))))\Rightarrow(\forall X1.(((\neg v2_struct_0 X1)\wedge((\\ & \neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 \\ & X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))))\Rightarrow(\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 \\ & (u1_struct_0 X0))\Rightarrow(\forall X4.(m1_cat_1 X4 X0 X2 X3)\Rightarrow(\forall X5. \\ & (m1_subset_1 X5 (u1_struct_0 X1))\Rightarrow(\forall X6.(m1_subset_1 X6 \\ & (u1_struct_0 X1))\Rightarrow(\forall X7.(m1_cat_1 X7 X1 X5 X6)\Rightarrow(\neg(k2_cat_1 \\ & X0 X2 X3\neq k1_xboole_0)\wedge((k2_cat_1 X1 X5 X6\neq k1_xboole_0)\wedge(\neg m1_cat_1 \\ & (k10_cat_2 X0 X1 X4 X7) (k8_cat_2 X0 X1) (k9_cat_2 X0 X1 X2 X5) (k9_cat_2 \\ & X0 X1 X3 X6)))))))))) \end{aligned}$$