

t72_cat_1 (TMGeZghJAYR- LeLf5XcRG8hEtWjxHf4yQMba)

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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 $m2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k8_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k7_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
& v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X0 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (u4_struct_0 X0) \Rightarrow \\
& ((k3_funct_2 (u1_struct_0 X0) (u1_struct_0 X1) (k7_cat_1 X0 X1 \\
& X2) (k3_graph_1 X0 X3) = k3_graph_1 X1 (k3_funct_2 (u4_struct_0 \\
& X0) (u4_struct_0 X1) X2 X3)) \wedge (k3_funct_2 (u1_struct_0 X0) (u1_struct_0 \\
& X1) (k7_cat_1 X0 X1 X2) (k4_graph_1 X0 X3) = k4_graph_1 X1 (k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 X3))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.(l1_cat_1 X0) \Rightarrow (l1_graph_1 X0) \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\
& (l1_graph_1 X0))) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (m1_subset_1 \\
& (k4_graph_1 X0 X1) (u1_struct_0 X0))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (&((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\ &(l1_graph_1 X0))) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (m1_subset_1 \\ &(k3_graph_1 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0. (&(\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ &X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ &X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((\\ &\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ &X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))))) \Rightarrow (\forall X2. \\ &(m2_cat_1 X2 X0 X1) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow \\ &(k8_cat_1 X0 X1 X2 X3 = k3_funct_2 (u1_struct_0 X0) (u1_struct_0 \\ &X1) (k7_cat_1 X0 X1 X2) X3))) \end{aligned} \quad (5)$$

Theorem 1

$$\begin{aligned} \forall X0. (&(\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ &X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ &X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((\\ &\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ &X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))))) \Rightarrow (\forall X2. \\ &(m2_cat_1 X2 X0 X1) \Rightarrow (\forall X3. (m1_subset_1 X3 (u4_struct_0 X0)) \Rightarrow \\ &((k8_cat_1 X0 X1 X2 (k3_graph_1 X0 X3) = k3_graph_1 X1 (k3_funct_2 \\ &(u4_struct_0 X0) (u4_struct_0 X1) X2 X3)) \wedge (k8_cat_1 X0 X1 X2 (k4_graph_1 \\ &X0 X3) = k4_graph_1 X1 (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ &X1) X2 X3)))))) \end{aligned}$$