

t63_cat_4 (TMMYfsFJuVDdnHXE- orKzp8zMJUMmxi8wGJS)

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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 $v6_cat_4 : \iota \Rightarrow o$ be given. Let $l2_cat_4 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r4_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k20_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k21_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k22_cat_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v11_cat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u5_cat_4 : \iota \Rightarrow \iota$ 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. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $u7_cat_4 : \iota \Rightarrow \iota$ be given. Let $u8_cat_4 : \iota \Rightarrow \iota$ be given. Let $k5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u6_cat_4 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l2_cat_4 X0)))))) \Rightarrow ((v6_cat_4 X0) \Leftrightarrow ((v11_cat_1 (u5_cat_4 \\
& X0) X0) \wedge (\forall X1. (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow ((k3_graph_1 X0 (k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u4_struct_0 X0) (u7_cat_4 X0) \\
& X1 X2) = X1) \wedge ((k3_graph_1 X0 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0) (u4_struct_0 X0) (u8_cat_4 X0) X1 X2) = X2) \wedge (r4_cat_3 X0 (k5_binop_1 \\
& (u1_struct_0 X0) (u6_cat_4 X0) X1 X2) (k2_binop_1 (u1_struct_0 \\
& X0) (u1_struct_0 X0) (u4_struct_0 X0) (u7_cat_4 X0) X1 X2) (k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u4_struct_0 X0) (u8_cat_4 X0) \\
& X1 X2)))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l2_cat_4 \\
& X0))) \Rightarrow (\forall X1. (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (k22_cat_4 X0 X1 X2 = k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u4_struct_0 X0) (u8_cat_4 X0) \\
& X1 X2)))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0) \wedge ((\neg v11_struct_0\ X0) \wedge (l2_cat_4 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1\ X2\ (u1_struct_0\ X0)) \Rightarrow (k21_cat_4\ X0\ X1\ X2 = k2_binop_1 \\ & (u1_struct_0\ X0)\ (u1_struct_0\ X0)\ (u4_struct_0\ X0)\ (u7_cat_4\ X0) \\ & X1\ X2))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0) \wedge ((\neg v11_struct_0\ X0) \wedge (l2_cat_4 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1\ X2\ (u1_struct_0\ X0)) \Rightarrow (k20_cat_4\ X0\ X1\ X2 = k5_binop_1 \\ & (u1_struct_0\ X0)\ (u6_cat_4\ X0)\ X1\ X2))) \end{aligned} \quad (4)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0) \wedge ((\neg v11_struct_0\ X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1\ X0) \wedge ((v4_cat_1\ X0) \wedge ((v5_cat_1\ X0) \wedge ((v6_cat_1 \\ & X0) \wedge ((v6_cat_4\ X0) \wedge (l2_cat_4\ X0)))))))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1\ (u1_struct_0\ X0)) \Rightarrow (\forall X2.(m1_subset_1\ X2\ (u1_struct_0 \\ & X0)) \Rightarrow (r4_cat_3\ X0\ (k20_cat_4\ X0\ X1\ X2)\ (k21_cat_4\ X0\ X1\ X2)\ (k22_cat_4 \\ & X0\ X1\ X2)))) \end{aligned}$$