

t31_cat_1 (TMHUh- WQGMNR7tjxAp8e3daYCvWe6PwmCzrJ)

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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 $v7_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& (m1_cat_1 X3 X0 X1 X2) \Rightarrow ((v7_cat_1 X3 X0 X1 X2) \Leftrightarrow ((k2_cat_1 X0 X1 X2 \neq \\
& k1_xboole_0) \wedge (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& ((k2_cat_1 X0 X4 X1 \neq k1_xboole_0) \Rightarrow (\forall X5.(m1_cat_1 X5 X0 X4 \\
& X1) \Rightarrow (\forall X6.(m1_cat_1 X6 X0 X4 X1) \Rightarrow ((k5_cat_1 X0 X4 X1 X2 X5 X3 = \\
& k5_cat_1 X0 X4 X1 X2 X6 X3) \Rightarrow (X5 = X6))))))))))
\end{aligned} \tag{1}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& (m1_cat_1 X3 X0 X1 X2) \Rightarrow ((k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \Rightarrow ((v7_cat_1 \\
& X3 X0 X1 X2) \Leftrightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5. \\
& (m1_cat_1 X5 X0 X4 X1) \Rightarrow (\forall X6.(m1_cat_1 X6 X0 X4 X1) \Rightarrow ((k5_cat_1 \\
& X0 X4 X1 X2 X5 X3 = k5_cat_1 X0 X4 X1 X2 X6 X3) \Rightarrow ((k2_cat_1 X0 X4 X1 = k1_xboole_0) \vee \\
& (X5 = X6))))))))))
\end{aligned}$$