

t27_cat_3

(TMSR9sScMm2xtEgsRZuGz5Jits3dvYXWDu1)

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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 $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k4_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
 & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
 & X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
 & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
 & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
 & (u1_struct_0 X0)) \Rightarrow (\forall X5.(m1_cat_1 X5 X0 X1 X2) \Rightarrow (\forall X6. \\
 & (m1_cat_1 X6 X0 X2 X3) \Rightarrow (\forall X7.(m1_cat_1 X7 X0 X3 X4) \Rightarrow (\neg(k2_cat_1 \\
 & X0 X1 X2 \neq k1_xboole_0) \wedge ((k2_cat_1 X0 X2 X3 \neq k1_xboole_0) \wedge ((k2_cat_1 \\
 & X0 X3 X4 \neq k1_xboole_0) \wedge (k5_cat_1 X0 X1 X2 X4 X5 (k5_cat_1 X0 X2 X3 X4 \\
 & X6 X7) \neq k5_cat_1 X0 X1 X3 X4 (k5_cat_1 X0 X1 X2 X3 X5 X6) X7)))))))))) \\
 & \tag{1}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
 & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
 & X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
 & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
 & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(k2_cat_1 X0 X1 X2 \neq k1_xboole_0) \wedge \\
 & ((k2_cat_1 X0 X2 X3 \neq k1_xboole_0) \wedge (k2_cat_1 X0 X1 X3 = k1_xboole_0)))))) \\
 & \tag{2}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge(v2_cat_1 X0)\wedge(v3_cat_1 \\
& \quad X0)\wedge(v4_cat_1 X0)\wedge(v5_cat_1 X0)\wedge(v6_cat_1 X0)\wedge(l1_cat_1 \\
& \quad X0))))\wedge((m1_subset_1 X1 (u1_struct_0 X0))\wedge(m1_subset_1 \\
& \quad X2 (u1_struct_0 X0))\wedge(m1_subset_1 X3 (u1_struct_0 X0))\wedge(m1_cat_1 \\
& \quad X4 X0 X1 X2)\wedge(m1_cat_1 X5 X0 X2 X3))))\Rightarrow(m1_cat_1 (k5_cat_1 X0 X1 \\
& \quad X2 X3 X4 X5) X0 X1 X3)
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge(v2_cat_1 \\
& \quad X0)\wedge(v3_cat_1 X0)\wedge(v4_cat_1 X0)\wedge(v5_cat_1 X0)\wedge(v6_cat_1 \\
& \quad X0)\wedge(l1_cat_1 X0))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& \quad X0))\Rightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3. \\
& \quad (m1_cat_1 X3 X0 X1 X2)\Rightarrow((v2_cat_3 X3 X0 X1 X2)\Leftrightarrow((k2_cat_1 X0 X1 X2\neq \\
& \quad k1_xboole_0)\wedge((k2_cat_1 X0 X2 X1\neq k1_xboole_0)\wedge(\exists X4.(\\
& \quad m1_cat_1 X4 X0 X2 X1)\wedge(k5_cat_1 X0 X1 X2 X1 X3 X4 = k4_cat_1 X0 X1))))))
\end{aligned} \tag{4}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge(\neg v11_struct_0 X0)\wedge(v2_cat_1 \\
& \quad X0)\wedge(v3_cat_1 X0)\wedge(v4_cat_1 X0)\wedge(v5_cat_1 X0)\wedge(v6_cat_1 \\
& \quad X0)\wedge(l1_cat_1 X0))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& \quad X0))\Rightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3. \\
& \quad (m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(\forall X4.(m1_cat_1 X4 X0 \\
& \quad X1 X2)\Rightarrow(\forall X5.(m1_cat_1 X5 X0 X2 X3)\Rightarrow((v2_cat_3 (k5_cat_1 \\
& \quad X0 X1 X2 X3 X4 X5) X0 X1 X3)\Rightarrow((k2_cat_1 X0 X2 X3 = k1_xboole_0)\vee((k2_cat_1 \\
& \quad X0 X3 X2 = k1_xboole_0)\vee(v2_cat_3 X4 X0 X1 X2))))))
\end{aligned}$$