

t22_cat_3
(TMRQFq7foag3E3aiGa3ysMcu2e65xQdTMRR)

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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 $v1_cat.3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v8_cat.1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_cat.1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_cat.1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat.1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole.0 : \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct.0 X0) \wedge ((\neg v11_struct.0 X0) \wedge ((v2_cat.1 \\ & X0) \wedge ((v3_cat.1 X0) \wedge ((v4_cat.1 X0) \wedge ((v5_cat.1 X0) \wedge ((v6_cat.1 \\ & X0) \wedge (l1_cat.1 X0)))))))) \Rightarrow (\forall X1.(m1_subset.1 X1 (u1_struct.0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset.1 X2 (u1_struct.0 X0)) \Rightarrow (\forall X3. \\ & (m1_cat.1 X3 X0 X1 X2) \Rightarrow (\forall X4.(m1_cat.1 X4 X0 X2 X1) \Rightarrow ((k5_cat.1 \\ & X0 X2 X1 X2 X4 X3 = k4_cat.1 X0 X2) \Rightarrow ((k2_cat.1 X0 X1 X2 = k1_xboole.0) \vee \\ & ((k2_cat.1 X0 X2 X1 = k1_xboole.0) \vee (v8_cat.1 X3 X0 X1 X2)))))))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct.0 X0) \wedge ((\neg v11_struct.0 X0) \wedge ((v2_cat.1 \\ & X0) \wedge ((v3_cat.1 X0) \wedge ((v4_cat.1 X0) \wedge ((v5_cat.1 X0) \wedge ((v6_cat.1 \\ & X0) \wedge (l1_cat.1 X0)))))))) \Rightarrow (\forall X1.(m1_subset.1 X1 (u1_struct.0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset.1 X2 (u1_struct.0 X0)) \Rightarrow (\forall X3. \\ & (m1_cat.1 X3 X0 X1 X2) \Rightarrow ((v1_cat.3 X3 X0 X1 X2) \Leftrightarrow ((k2_cat.1 X0 X1 X2 \neq \\ & k1_xboole.0) \wedge ((k2_cat.1 X0 X2 X1 \neq k1_xboole.0) \wedge (\exists X4.(\\ & m1_cat.1 X4 X0 X2 X1) \wedge (k5_cat.1 X0 X2 X1 X2 X4 X3 = k4_cat.1 X0 X2)))))))))) \end{aligned} \quad (2)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct.0 X0) \wedge ((\neg v11_struct.0 X0) \wedge ((v2_cat.1 \\ & X0) \wedge ((v3_cat.1 X0) \wedge ((v4_cat.1 X0) \wedge ((v5_cat.1 X0) \wedge ((v6_cat.1 \\ & X0) \wedge (l1_cat.1 X0)))))))) \Rightarrow (\forall X1.(m1_subset.1 X1 (u1_struct.0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset.1 X2 (u1_struct.0 X0)) \Rightarrow (\forall X3. \\ & (m1_cat.1 X3 X0 X1 X2) \Rightarrow ((v1_cat.3 X3 X0 X1 X2) \Rightarrow (v8_cat.1 X3 X0 X1 X2)))))) \end{aligned}$$