

t11_altcat_3

(TMaKGS7zb7NbpzfnEtFLLMXMbF3sMD547yu)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_altcat_1 : \iota \Rightarrow o$ be given. Let $v11_altcat_1 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v4_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
 & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
 & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
 & (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
 & (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge ((k1_altcat_1 \\
 & X0 X2 X3 \neq k1_xboole_0) \wedge ((k1_altcat_1 X0 X3 X4 \neq k1_xboole_0) \wedge (\neg \\
 & \forall X5.(m1_subset_1 X5 (k1_altcat_1 X0 X1 X2)) \Rightarrow (\forall X6. \\
 & (m1_subset_1 X6 (k1_altcat_1 X0 X2 X3)) \Rightarrow (\forall X7.(m1_subset_1 \\
 & X7 (k1_altcat_1 X0 X3 X4)) \Rightarrow (k5_altcat_1 X0 X1 X3 X4 (k5_altcat_1 \\
 & X0 X1 X2 X3 X5 X6) X7 = k5_altcat_1 X0 X1 X2 X4 X5 (k5_altcat_1 X0 X2 X3 \\
 & X4 X6 X7)))))))))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
 & (((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \wedge ((m1_subset_1 X1 (u1_struct_0 \\
 & X0)) \wedge ((m1_subset_1 X2 (u1_struct_0 X0)) \wedge ((m1_subset_1 X3 (u1_struct_0 \\
 & X0)) \wedge ((m1_subset_1 X4 (k1_altcat_1 X0 X1 X2)) \wedge (m1_subset_1 X5 \\
 & (k1_altcat_1 X0 X2 X3)))))) \Rightarrow (m1_subset_1 (k5_altcat_1 X0 X1 X2 \\
 & X3 X4 X5) (k1_altcat_1 X0 X1 X3))
 \end{aligned}
 \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_altcat_1 X0 \\
& X1 X2)) \Rightarrow ((v4_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X0)) \Rightarrow ((k1_altcat_1 X0 X4 X1 \neq k1_xboole_0) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (k1_altcat_1 X0 X4 X1)) \Rightarrow (\forall X6.(m1_subset_1 \\
& X6 (k1_altcat_1 X0 X4 X1)) \Rightarrow ((k5_altcat_1 X0 X4 X1 X2 X5 X3 = k5_altcat_1 \\
& X0 X4 X1 X2 X6 X3) \Rightarrow (X5 = X6))))))))))
\end{aligned} \tag{3}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge \\
& ((k1_altcat_1 X0 X2 X3 \neq k1_xboole_0) \wedge (\exists X4.(m1_subset_1 \\
& X4 (k1_altcat_1 X0 X1 X2)) \wedge (\exists X5.(m1_subset_1 X5 (k1_altcat_1 \\
& X0 X2 X3)) \wedge (v4_altcat_3 (k5_altcat_1 X0 X1 X2 X3 X4 X5) X0 X1 X3) \wedge \\
& (\neg v4_altcat_3 X4 X0 X1 X2))))))))))
\end{aligned}$$