

t10_altcat_3
(TMJdG8w33hv4T1vEi6i6QcsHP5mbxP7QHCu)

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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 $v5_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ 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.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \tag{2}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_altcat_1 X0 \\
& X1 X2)) \Rightarrow ((v5_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X0)) \Rightarrow ((k1_altcat_1 X0 X2 X4 \neq k1_xboole_0) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (k1_altcat_1 X0 X2 X4)) \Rightarrow (\forall X6.(m1_subset_1 \\
& X6 (k1_altcat_1 X0 X2 X4)) \Rightarrow ((k5_altcat_1 X0 X1 X2 X4 X3 X5 = k5_altcat_1 \\
& X0 X1 X2 X4 X3 X6) \Rightarrow (X5 = X6))))))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1_altcat_1 X0) \Rightarrow ((v2_altcat_1 X0) \Leftrightarrow (\forall X1.(\\
& m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow \\
& (\neg(k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge ((k1_altcat_1 X0 X2 X3 \neq k1_xboole_0) \wedge \\
& (k1_altcat_1 X0 X1 X3 = k1_xboole_0))))))
\end{aligned} \tag{5}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge \\
& ((k1_altcat_1 X0 X2 X3 \neq k1_xboole_0) \wedge (\exists X4.(m1_subset_1 \\
& X4 (k1_altcat_1 X0 X1 X2)) \wedge (\exists X5.(m1_subset_1 X5 (k1_altcat_1 \\
& X0 X2 X3)) \wedge ((v5_altcat_3 X4 X0 X1 X2) \wedge ((v5_altcat_3 X5 X0 X2 X3) \wedge \\
& (\neg v5_altcat_3 (k5_altcat_1 X0 X1 X2 X3 X4 X5) X0 X1 X3))))))))))
\end{aligned}$$