

t38_altcat_4

(TMSTnFFaoCh2To2yFa3qE8eDvqZK1CiNsAf)

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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 $v12_altcat_1 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $v3_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ 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 $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\ \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v3_altcat_2 X1 X0) \wedge (m1_altcat_2 \\ X1 X0)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X1)) \Rightarrow (\forall X3. \\ (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow ((X2 = X3) \Rightarrow (k8_altcat_1 X1 X2 = \\ k8_altcat_1 X0 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge (l2_altcat_1 \\ X0))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge (m1_altcat_2 \\ X1 X0))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X1)) \Rightarrow (\forall X3. \\ (m1_subset_1 X3 (u1_struct_0 X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\ (u1_struct_0 X1)) \Rightarrow (\neg (k1_altcat_1 X1 X2 X3 \neq k1_xboole_0) \wedge ((k1_altcat_1 \\ X1 X3 X4 \neq k1_xboole_0) \wedge (\exists X5.(m1_subset_1 X5 (u1_struct_0 \\ X0)) \wedge (\exists X6.(m1_subset_1 X6 (u1_struct_0 X0)) \wedge (\exists X7. \\ (m1_subset_1 X7 (u1_struct_0 X0)) \wedge ((X5 = X2) \wedge ((X6 = X3) \wedge ((X7 = X4) \wedge \\ (\exists X8.(m1_subset_1 X8 (k1_altcat_1 X0 X5 X6)) \wedge (\exists X9. \\ (m1_subset_1 X9 (k1_altcat_1 X0 X6 X7)) \wedge (\exists X10.(m1_subset_1 \\ X10 (k1_altcat_1 X1 X2 X3)) \wedge (\exists X11.(m1_subset_1 X11 (k1_altcat_1 \\ X1 X3 X4)) \wedge ((X8 = X10) \wedge ((X9 = X11) \wedge (k5_altcat_1 X0 X5 X6 X7 X8 X9 \neq k5_altcat_1 \\ X1 X2 X3 X4 X10 X11)))))))))))))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (l2_altcat_1 X1)) \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& \quad (k1_altcat_1 X0 X1 X2)) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_altcat_1 \\
& \quad X0 X2 X1)) \Rightarrow ((r1_altcat_3 X0 X1 X2 X3 X4) \Leftrightarrow (k5_altcat_1 X0 X2 X1 X2 X4 \\
& \quad X3 = k8_altcat_1 X0 X2))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& \quad X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((\\
& \quad \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge (v3_altcat_2 X1 X0))) \Rightarrow ((\\
& \quad \neg v2_struct_0 X1) \wedge (v12_altcat_1 X1)))
\end{aligned} \tag{5}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& \quad X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\\
& \quad \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v3_altcat_2 X1 X0) \wedge (m1_altcat_2 \\
& \quad X1 X0)))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& \quad (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& \quad (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow \\
& \quad (\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X2 X3)) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k1_altcat_1 X0 X3 X2)) \Rightarrow (\forall X8.(m1_subset_1 \\
& \quad X8 (k1_altcat_1 X1 X4 X5)) \Rightarrow (\forall X9.(m1_subset_1 X9 (k1_altcat_1 \\
& \quad X1 X5 X4)) \Rightarrow (((X4 = X2) \wedge ((X5 = X3) \wedge ((X6 = X8) \wedge (X7 = X9)))) \Rightarrow ((k1_altcat_1 \\
& \quad X1 X4 X5 = k1_xboole_0) \vee ((k1_altcat_1 X1 X5 X4 = k1_xboole_0) \vee ((\\
& \quad (r1_altcat_3 X0 X2 X3 X6 X7) \Rightarrow (r1_altcat_3 X1 X4 X5 X8 X9)) \wedge ((r1_altcat_3 \\
& \quad X1 X4 X5 X8 X9) \Rightarrow (r1_altcat_3 X0 X2 X3 X6 X7)) \wedge (((r1_altcat_3 X0 X3 \\
& \quad X2 X7 X6) \Rightarrow (r1_altcat_3 X1 X5 X4 X9 X8)) \wedge ((r1_altcat_3 X1 X5 X4 X9 X8) \Rightarrow \\
& \quad (r1_altcat_3 X0 X3 X2 X7 X6))))))))))
\end{aligned}$$