

t40_altcat_4

(TMS8AaYDPgktDgqhBZxGtXgayk9R19XPm4o)

October 27, 2020

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 $v1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ & X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\neg(k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \wedge ((k1_altcat_1 X0 X2 \\ & X1 \neq k1_xboole_0) \wedge (\neg \forall X3.(m1_subset_1 X3 (k1_altcat_1 X0 \\ & X1 X2)) \Rightarrow ((v3_altcat_3 X3 X0 X1 X2) \Leftrightarrow ((v1_altcat_3 X3 X0 X1 X2) \wedge (v2_altcat_3 \\ & X3 X0 X1 X2)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ & X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_altcat_1 X0 X1 X2)) \Rightarrow ((v3_altcat_3 \\ & X3 X0 X1 X2) \Rightarrow ((v1_altcat_3 X3 X0 X1 X2) \wedge (v2_altcat_3 X3 X0 X1 X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(r1_tarski X0 k1_xboole_0) \Rightarrow (X0 = k1_xboole_0) \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& \quad X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v3_altcat_2 X1 X0) \wedge (m1_altcat_2 \\
& \quad X1 X0)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& \quad (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& \quad (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow \\
& \quad (\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X2 X3)) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k1_altcat_1 X0 X3 X2)) \Rightarrow (\forall X8.(m1_subset_1 \\
& \quad X8 (k1_altcat_1 X1 X4 X5)) \Rightarrow (\forall X9.(m1_subset_1 X9 (k1_altcat_1 \\
& \quad X1 X5 X4)) \Rightarrow (((X4 = X2) \wedge ((X5 = X3) \wedge ((X6 = X8) \wedge (X7 = X9)))))) \Rightarrow ((k1_altcat_1 \\
& \quad X1 X4 X5 = k1_xboole_0) \vee ((k1_altcat_1 X1 X5 X4 = k1_xboole_0) \vee ((\\
& \quad (r1_altcat_3 X0 X2 X3 X6 X7) \Rightarrow (r1_altcat_3 X1 X4 X5 X8 X9)) \wedge ((r1_altcat_3 \\
& \quad X1 X4 X5 X8 X9) \Rightarrow (r1_altcat_3 X0 X2 X3 X6 X7)) \wedge ((r1_altcat_3 X0 X3 \\
& \quad X2 X7 X6) \Rightarrow (r1_altcat_3 X1 X5 X4 X9 X8)) \wedge ((r1_altcat_3 X1 X5 X4 X9 X8) \Rightarrow \\
& \quad (r1_altcat_3 X0 X3 X2 X7 X6))))))))))))) \Rightarrow \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (m1_altcat_2 X1 X0)) \Rightarrow (\forall X2.(m1_subset_1 \\
& \quad X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& \quad X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5. \\
& \quad (m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow (((X2 = X4) \wedge (X3 = X5)) \Rightarrow ((k1_altcat_1 \\
& \quad X1 X4 X5 = k1_xboole_0) \vee (\forall X6.(m1_subset_1 X6 (k1_altcat_1 \\
& \quad X1 X4 X5)) \Rightarrow (m1_subset_1 X6 (k1_altcat_1 X0 X2 X3)))))))))) \Rightarrow \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (m1_altcat_2 X1 X0)) \Rightarrow (\forall X2.(m1_subset_1 \\
& \quad X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& \quad X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5. \\
& \quad (m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow (((X2 = X4) \wedge (X3 = X5)) \Rightarrow (r1_tarski \\
& \quad (k1_altcat_1 X1 X4 X5) (k1_altcat_1 X0 X2 X3)))))) \Rightarrow \end{aligned} \tag{6}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (l2_altcat_1 X1)) \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2)) \Rightarrow ((v2_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1)) \wedge (r1_altcat_3 X0 X2 X1 X4 \\
& X3))))))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2)) \Rightarrow ((v1_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1)) \wedge (r1_altcat_3 X0 X1 X2 X3 \\
& X4))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((\\
& \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge (v3_altcat_2 X1 X0))) \Rightarrow ((\\
& \neg v2_struct_0 X1) \wedge (v12_altcat_1 X1)))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((\\
& \neg v2_struct_0 X1) \wedge (v2_altcat_1 X1)) \Rightarrow ((\neg v2_struct_0 X1) \wedge (v11_altcat_1 \\
& X1)))
\end{aligned} \tag{11}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge (v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\\
& \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v3_altcat_2 X1 X0) \wedge (m1_altcat_2 \\
& X1 X0)))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow \\
& (\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X2 X3)) \Rightarrow (\forall X7. \\
& (m1_subset_1 X7 (k1_altcat_1 X1 X4 X5)) \Rightarrow (((X4 = X2) \wedge ((X5 = X3) \wedge \\
& X6 = X7)) \Rightarrow ((k1_altcat_1 X1 X4 X5 = k1_xboole.0) \vee ((k1_altcat_1 \\
& X1 X5 X4 = k1_xboole.0) \vee ((v1_altcat_3 X7 X1 X4 X5) \Rightarrow (v1_altcat_3 \\
& X6 X0 X2 X3)) \wedge ((v2_altcat_3 X7 X1 X4 X5) \Rightarrow (v2_altcat_3 X6 X0 X2 X3)) \wedge \\
& ((v3_altcat_3 X7 X1 X4 X5) \Rightarrow (v3_altcat_3 X6 X0 X2 X3))))))))))
\end{aligned}$$