

t39_altcat_4

(TMT3WPb4WeZDDqdv7NkjEziwWAb278njjq4)

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 $v2_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ 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 $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

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

(1)

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& \quad X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v3_altcat_2 X1 X0) \wedge (m1_altcat_2 \\
& \quad X1 X0)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3. \\
& \quad (m1_subset_1 X3 (u1_struct_0 X0))) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& \quad (u1_struct_0 X1))) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X1))) \Rightarrow \\
& \quad (\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X2 X3))) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k1_altcat_1 X0 X3 X2))) \Rightarrow (\forall X8.(m1_subset_1 \\
& \quad X8 (k1_altcat_1 X1 X4 X5))) \Rightarrow (\forall X9.(m1_subset_1 X9 (k1_altcat_1 \\
& \quad X1 X5 X4))) \Rightarrow (((X4 = X2) \wedge ((X5 = X3) \wedge ((X6 = X8) \wedge (X7 = X9)))) \Rightarrow ((k1_altcat_1 \\
& \quad X1 X4 X5 = k1_xboole_0) \vee ((k1_altcat_1 X1 X5 X4 = k1_xboole_0) \vee ((\\
& \quad (r1_altcat_3 X0 X2 X3 X6 X7) \Rightarrow (r1_altcat_3 X1 X4 X5 X8 X9)) \wedge ((r1_altcat_3 \\
& \quad X1 X4 X5 X8 X9) \Rightarrow (r1_altcat_3 X0 X2 X3 X6 X7)) \wedge ((r1_altcat_3 X0 X3 \\
& \quad X2 X7 X6) \Rightarrow (r1_altcat_3 X1 X5 X4 X9 X8)) \wedge ((r1_altcat_3 X1 X5 X4 X9 X8) \Rightarrow \\
& \quad (r1_altcat_3 X0 X3 X2 X7 X6))))))))))))) \tag{2}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_altcat_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge ((v2_altcat_2 X1 X0) \wedge (m1_altcat_2 X1 X0))) \Rightarrow \\
& (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 \\
& \quad X3 (u1_struct_0 X0))) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 \\
& \quad X1))) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X1))) \Rightarrow (((X2 = X4) \wedge \\
& (X3 = X5)) \Rightarrow (k1_altcat_1 X0 X2 X3 = k1_altcat_1 X1 X4 X5)))))) \tag{3}
\end{aligned}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (l2_altcat_1 X1)) \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))) \Rightarrow ((v2_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1))) \wedge (r1_altcat_3 X0 X2 X1 X4 \\
& \quad X3)))))) \tag{5}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))) \Rightarrow ((v1_altcat_3 X3 X0 X1 X2) \Leftrightarrow (\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1))) \wedge (r1_altcat_3 X0 X1 X2 X3 \\
& \quad X4)))))) \tag{6}
\end{aligned}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((\\ \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge (v3_altcat_2 X1 X0))) \Rightarrow ((\\ \neg v2_struct_0 X1) \wedge (v12_altcat_1 X1)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((\\ \neg v2_struct_0 X1) \wedge (v2_altcat_1 X1)) \Rightarrow ((\neg v2_struct_0 X1) \wedge (v11_altcat_1 \\ X1)))) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\ \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v2_altcat_2 X1 X0) \wedge ((v3_altcat_2 \\ X1 X0) \wedge (m1_altcat_2 X1 X0)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4. \\ (m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 \\ (u1_struct_0 X1)) \Rightarrow (\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 \\ X2 X3)) \Rightarrow (\forall X7.(m1_subset_1 X7 (k1_altcat_1 X1 X4 X5)) \Rightarrow ((\\ (X4 = X2) \wedge ((X5 = X3) \wedge (X6 = X7))) \Rightarrow ((k1_altcat_1 X1 X4 X5 = k1_xboole_0) \vee \\ ((k1_altcat_1 X1 X5 X4 = k1_xboole_0) \vee (((v1_altcat_3 X6 X0 X2 X3) \Rightarrow \\ (v1_altcat_3 X7 X1 X4 X5)) \wedge (((v2_altcat_3 X6 X0 X2 X3) \Rightarrow (v2_altcat_3 \\ X7 X1 X4 X5)) \wedge ((v3_altcat_3 X6 X0 X2 X3) \Rightarrow (v3_altcat_3 X7 X1 X4 X5)))))))))))))) \end{aligned}$$