

t19_altcat_3 (TMKJhxTx- CJn7zLUhVko34KgeuY1Mbxm8XSd)

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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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $v2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_altcat_1 : \iota \Rightarrow \iota$ be given. Let $u2_altcat_1 : \iota \Rightarrow \iota$ be given. Let $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow ((k1_altcat_1 X0 X1 X2 \neq k1_xboole_0) \Rightarrow \\
& (\forall X3.(m1_subset_1 X3 (k1_altcat_1 X0 X1 X2)) \Rightarrow (k5_altcat_1 \\
& X0 X1 X2 X2 X3 (k8_altcat_1 X0 X2) = X3))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \tag{3}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge(l2_altcat_1 X0))\Rightarrow(\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2.(m1_subset_1 X2 \\
& (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow \\
& (\neg(k1_altcat_1 X0 X1 X2\neq k1_xboole_0)\wedge((k1_altcat_1 X0 X2 X3\neq k1_xboole_0)\wedge \\
& (\neg\forall X4.(m1_subset_1 X4 (k1_altcat_1 X0 X1 X2))\Rightarrow(\forall X5. \\
& (m1_subset_1 X5 (k1_altcat_1 X0 X2 X3))\Rightarrow(k5_altcat_1 X0 X1 X2 X3 \\
& X4 X5 = k1_binop_1 (k4_altcat_1 (u1_struct_0 X0) (u1_altcat_1 X0) \\
& (u2_altcat_1 X0) X1 X2 X3) X5 X4))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 \\
& X0)))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))\Rightarrow((v2_altcat_3 X3 X0 X1 X2)\Leftrightarrow(\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1))\wedge(r1_altcat_3 X0 X2 X1 X4 \\
& X3))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l1_altcat_1 X0)\Rightarrow((v2_altcat_1 X0)\Leftrightarrow(\forall X1.(\\
& m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2.(m1_subset_1 X2 \\
& (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow \\
& (\neg(k1_altcat_1 X0 X1 X2\neq k1_xboole_0)\wedge((k1_altcat_1 X0 X2 X3\neq k1_xboole_0)\wedge \\
& (k1_altcat_1 X0 X1 X3 = k1_xboole_0))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 \\
& X0)))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))\Rightarrow(\forall X4.(m1_subset_1 X4 (k1_altcat_1 \\
& X0 X2 X1))\Rightarrow((r1_altcat_3 X0 X1 X2 X3 X4)\Leftrightarrow(k5_altcat_1 X0 X2 X1 X2 X4 \\
& X3 = k8_altcat_1 X0 X2))))))
\end{aligned} \tag{8}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ & X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.(m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 \\ & X0 X1 X2 \neq k1_xboole_0) \wedge ((k1_altcat_1 X0 X2 X3 \neq k1_xboole_0) \wedge ((\\ & k1_altcat_1 X0 X3 X1 \neq k1_xboole_0) \wedge (\exists X4.(m1_subset_1 X4 \\ & (k1_altcat_1 X0 X1 X2)) \wedge (\exists X5.(m1_subset_1 X5 (k1_altcat_1 \\ & X0 X2 X3)) \wedge ((v2_altcat_3 X4 X0 X1 X2) \wedge ((v2_altcat_3 X5 X0 X2 X3) \wedge \\ & (\neg v2_altcat_3 (k5_altcat_1 X0 X1 X2 X3 X4 X5) X0 X1 X3)))))))))) \end{aligned}$$