

t19_altcat_4
(TMZgbsi1kG2yyZybsPmLVypA48LNtnDnhpZ)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_altcat_1 : \iota \Rightarrow o$ be given. Let $v12_altcat_1 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $v15_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k6_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $l1_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v10_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_altcat_2 : \iota \Rightarrow o$ be given. Let $v8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v13_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\ X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v15_functor0 \\ X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\ u1_struct_0 X0)) \Rightarrow (k6_functor0 X0 X1 X2 X3 X3 (k8_altcat_1 X0 X3) = \\ k8_altcat_1 X1 (k3_functor0 X0 X1 X2 X3)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\ ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\ ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\ X2 X0 X1) \Rightarrow (l2_functor0 X2 X0 X1)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((l1_altcat_1 X0) \wedge (l1_altcat_1 X1)) \Rightarrow (\\ \forall X2.(l2_functor0 X2 X0 X1) \Rightarrow (l1_functor0 X2 X0 X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2_struct_0 X0)\wedge(l1_altcat_1 X0))\wedge((\neg v2_struct_0 X1)\wedge \\
& (l1_altcat_1 X1))\wedge(((v10_functor0 X2 X0 X1)\wedge(l2_functor0 X2 X0 \\
& X1))\wedge((m1_subset_1 X3 (u1_struct_0 X0))\wedge((m1_subset_1 X4 (u1_struct_0 \\
& X0))\wedge(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4))))))\Rightarrow(m1_subset_1 \\
& (k6_functor0 X0 X1 X2 X3 X4 X5) (k1_altcat_1 X1 (k3_functor0 X0 X1 \\
& X2 X3) (k3_functor0 X0 X1 X2 X4)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.((\neg v2_struct_0 \\
& X0)\wedge(l1_altcat_1 X0))\wedge((\neg v2_struct_0 X1)\wedge(l1_altcat_1 X1))\wedge \\
& ((l1_functor0 X2 X0 X1)\wedge(m1_subset_1 X3 (u1_struct_0 X0)))\Rightarrow \\
& (m1_subset_1 (k3_functor0 X0 X1 X2 X3) (u1_struct_0 X1))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 \\
& X0)))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))\Rightarrow((v2_altcat_3 X3 X0 X1 X2)\Leftrightarrow(\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1))\wedge(r1_altcat_3 X0 X2 X1 X4 \\
& X3))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge((v2_altcat_1 X0)\wedge(l2_altcat_1 \\
& X0)))\Rightarrow(\forall X1.((\neg v2_struct_0 X1)\wedge((v1_altcat_2 X1)\wedge(l2_altcat_1 \\
& X1)))\Rightarrow(\forall X2.((v8_functor0 X2 X0 X1)\wedge((v10_functor0 X2 X0 \\
& X1)\wedge(l2_functor0 X2 X0 X1)))\Rightarrow((v13_functor0 X2 X0 X1)\Leftrightarrow(\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X0))\Rightarrow(\forall X5.(m1_subset_1 X5 (u1_struct_0 X0))\Rightarrow \\
& (\neg(k1_altcat_1 X0 X3 X4\neq k1_xboole_0)\wedge((k1_altcat_1 X0 X4 X5\neq k1_xboole_0)\wedge \\
& (\neg\forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X3 X4))\Rightarrow(\forall X7. \\
& (m1_subset_1 X7 (k1_altcat_1 X0 X4 X5))\Rightarrow(k6_functor0 X0 X1 X2 X3 \\
& X5 (k5_altcat_1 X0 X3 X4 X5 X6 X7) = k5_altcat_1 X1 (k3_functor0 X0 \\
& X1 X2 X3) (k3_functor0 X0 X1 X2 X4) (k3_functor0 X0 X1 X2 X5) (k6_functor0 \\
& X0 X1 X2 X3 X4 X6) (k6_functor0 X0 X1 X2 X4 X5 X7))))))))))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2)) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_altcat_1 \\
& X0 X2 X1)) \Rightarrow ((r1_altcat_3 X0 X1 X2 X3 X4) \Leftrightarrow (k5_altcat_1 X0 X2 X1 X2 X4 \\
& X3 = k8_altcat_1 X0 X2))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v15_functor0 X2 X0 X1) \Rightarrow ((v10_functor0 X2 X0 X1) \wedge (v13_functor0 \\
& X2 X0 X1))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2_altcat_1 X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v12_altcat_1 \\
& X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge (v1_altcat_2 X0)))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1)))
\end{aligned} \tag{12}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v15_functor0 \\
& X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\
& u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& (\forall X5.(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v2_altcat_3 \\
& X5 X0 X3 X4) \Rightarrow ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 \\
& X0 X4 X3 = k1_xboole_0) \vee (v2_altcat_3 (k6_functor0 X0 X1 X2 X3 X4 X5) \\
& X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 X0 X1 X2 X4))))))))))
\end{aligned}$$