

t22_altcat_4 (TMG- GDJpSC66zGz3Lm1KW3a6qoamkAviMfB6)

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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 $v16_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k1_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $l1_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v11_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_altcat_2 : \iota \Rightarrow o$ be given. Let $v8_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v14_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\ & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v16_functor0 \\ & X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\ & u1_struct_0 X0)) \Rightarrow (k8_functor0 X0 X1 X2 X3 X3 (k8_altcat_1 X0 X3) = \\ & k8_altcat_1 X1 (k3_functor0 X0 X1 X2 X3)))))) \end{aligned} \quad (1)$$

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.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2_struct_0 X0)\wedge(l1_altcat_1 X0))\wedge((\neg v2_struct_0 X1)\wedge \\
& (l1_altcat_1 X1))\wedge((v11_functor0 X2 X0 X1)\wedge(l2_functor0 X2 X0 \\
& X1))\wedge((m1_subset_1 X3 (u1_struct_0 X0))\wedge((m1_subset_1 X4 (u1_struct_0 \\
& X0))\wedge(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4))))))\Rightarrow(m1_subset_1 \\
& (k8_functor0 X0 X1 X2 X3 X4 X5) (k1_altcat_1 X1 (k3_functor0 X0 X1 \\
& X2 X4) (k3_functor0 X0 X1 X2 X3)))
\end{aligned} \tag{5}$$

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.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 \\
& X0)))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 X0))\Rightarrow(\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0))\Rightarrow(\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2))\Rightarrow((v1_altcat_3 X3 X0 X1 X2)\Leftrightarrow(\exists X4. \\
& (m1_subset_1 X4 (k1_altcat_1 X0 X2 X1))\wedge(r1_altcat_3 X0 X1 X2 X3 \\
& X4))))))
\end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v1_altcat_2 X1) \wedge (l2_altcat_1 \\
& X1))) \Rightarrow (\forall X2.((v8_functor0 X2 X0 X1) \wedge ((v11_functor0 X2 X0 \\
& X1) \wedge (l2_functor0 X2 X0 X1))) \Rightarrow ((v14_functor0 X2 X0 X1) \Leftrightarrow (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow \\
& (\neg(k1_altcat_1 X0 X3 X4 \neq k1_xboole_0) \wedge ((k1_altcat_1 X0 X4 X5 \neq k1_xboole_0) \wedge \\
& (\neg \forall X6.(m1_subset_1 X6 (k1_altcat_1 X0 X3 X4)) \Rightarrow (\forall X7. \\
& (m1_subset_1 X7 (k1_altcat_1 X0 X4 X5)) \Rightarrow (k8_functor0 X0 X1 X2 X3 \\
& X5 (k5_altcat_1 X0 X3 X4 X5 X6 X7) = k5_altcat_1 X1 (k3_functor0 X0 \\
& X1 X2 X5) (k3_functor0 X0 X1 X2 X4) (k3_functor0 X0 X1 X2 X3) (k8_functor0 \\
& X0 X1 X2 X4 X5 X7) (k8_functor0 X0 X1 X2 X3 X4 X6))))))))))))) \\
& \tag{9}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\
& X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (k1_altcat_1 X0 X1 X2)) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_altcat_1 \\
& X0 X2 X1)) \Rightarrow ((r1_altcat_3 X0 X1 X2 X3 X4) \Leftrightarrow (k5_altcat_1 X0 X2 X1 X2 X4 \\
& X3 = k8_altcat_1 X0 X2)))))) \\
& \tag{10}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v16_functor0 X2 X0 X1) \Rightarrow ((v11_functor0 X2 X0 X1) \wedge (v14_functor0 \\
& X2 X0 X1)))) \\
& \tag{11}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(l2_altcat_1 X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v12_altcat_1 \\
& X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge (v1_altcat_2 X0))) \\
& \tag{12}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1))) \\
& \tag{13}
\end{aligned}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\ & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v16_functor0 \\ & X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\ & u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\ & (\forall X5.(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v1_altcat_3 \\ & X5 X0 X3 X4) \Rightarrow ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 \\ & X0 X4 X3 = k1_xboole_0) \vee (v2_altcat_3 (k8_functor0 X0 X1 X2 X3 X4 X5) \\ & X1 (k3_functor0 X0 X1 X2 X4) (k3_functor0 X0 X1 X2 X3)))))))))) \end{aligned}$$