

t20_altcat_4

(TMaiWr1Txo1t1dk8Batb5k9QwozbrX8hJyw)

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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 $v15_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v3_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v1_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_altcat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v13_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\ & X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\ & X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v15_functor0 \\ & X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\ & u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\ & (\forall X5.(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v2_altcat_3 \\ & X5 X0 X3 X4) \Rightarrow ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 \\ & X0 X4 X3 = k1_xboole_0) \vee (v2_altcat_3 (k6_functor0 X0 X1 X2 X3 X4 X5) \\ & X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 X0 X1 X2 X4)))))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.((v15_functor0 \\
& X2 X0 X1) \wedge (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\
& u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& (\forall X5.(m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v1_altcat_3 \\
& X5 X0 X3 X4) \Rightarrow ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 \\
& X0 X4 X3 = k1_xboole_0) \vee (v1_altcat_3 (k6_functor0 X0 X1 X2 X3 X4 X5) \\
& X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 X0 X1 X2 X4)))))))))) \\
& \tag{3}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow (l2_functor0 X2 X0 X1)) \\
& \tag{4}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((l1_altcat_1 X0) \wedge (l1_altcat_1 X1)) \Rightarrow (\\
& \forall X2.(l2_functor0 X2 X0 X1) \Rightarrow (l1_functor0 X2 X0 X1)) \\
& \tag{5}
\end{aligned}$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \wedge (((\neg v2_struct_0 X1) \wedge \\
& (l1_altcat_1 X1)) \wedge ((v10_functor0 X2 X0 X1) \wedge (l2_functor0 X2 X0 \\
& X1)) \wedge ((m1_subset_1 X3 (u1_struct_0 X0)) \wedge ((m1_subset_1 X4 (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)))))) \Rightarrow (m1_subset_1 \\
& (k6_functor0 X0 X1 X2 X3 X4 X5) (k1_altcat_1 X1 (k3_functor0 X0 X1 \\
& X2 X3) (k3_functor0 X0 X1 X2 X4))) \\
& \tag{7}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& X0) \wedge (l1_altcat_1 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \wedge \\
& ((l1_functor0 X2 X0 X1) \wedge (m1_subset_1 X3 (u1_struct_0 X0)))) \Rightarrow \\
& (m1_subset_1 (k3_functor0 X0 X1 X2 X3) (u1_struct_0 X1)) \\
& \tag{8}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \Rightarrow (\forall X2.((v10_functor0 \\
& X2 X0 X1) \wedge (l2_functor0 X2 X0 X1)) \Rightarrow ((v8_functor0 X2 X0 X1) \Leftrightarrow (\forall X3. \\
& (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& (u1_struct_0 X0)) \Rightarrow (\neg(k1_altcat_1 X0 X3 X4 \neq k1_xboole_0) \wedge (k1_altcat_1 \\
& X1 (k3_functor0 X0 X1 X2 X3) (k3_functor0 X0 X1 X2 X4) = k1_xboole_0))))))))) \\
& \tag{9}
\end{aligned}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1))) \\
& \tag{11}
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\
& \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\
& X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow (\forall X2.((v15_functor0 X2 X0 X1) \wedge \\
& (m2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow ((v3_altcat_3 X5 X0 X3 X4) \Rightarrow \\
& ((k1_altcat_1 X0 X3 X4 = k1_xboole_0) \vee ((k1_altcat_1 X0 X4 X3 = k1_xboole_0) \vee \\
& (v3_altcat_3 (k6_functor0 X0 X1 X2 X3 X4 X5) X1 (k3_functor0 X0 X1 \\
& X2 X3) (k3_functor0 X0 X1 X2 X4))))))))))))) \\
& \tag{12}
\end{aligned}$$