

t42_yellow20 (TMP-
WKeVbBV9729pp7bTym3eMLSv5v4Ccn7c)

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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 $v16_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v21_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r3_yellow20 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u1_altcat_1 : \iota \Rightarrow \iota$ be given. Let $v3_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $v11_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v14_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 \\ & X0))) \Rightarrow (\forall X1.(m1_altcat_2 X1 X0) \Rightarrow (((u1_struct_0 X0 = u1_struct_0 \\ & X1) \wedge (u1_altcat_1 X0 = u1_altcat_1 X1)) \Rightarrow (v3_altcat_2 X1 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.(l2_altcat_1 X0) \Rightarrow (m1_altcat_2 X0 X0) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\ & X0) \wedge (l1_altcat_1 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \wedge \\ & ((v11_functor0 X2 X0 X1) \wedge (l2_functor0 X2 X0 X1)) \wedge ((m1_subset_1 \\ & X3 (u1_struct_0 X0)) \wedge (m1_subset_1 X4 (u1_struct_0 X0)))))) \Rightarrow (\\ & k7_functor0 X0 X1 X2 X3 X4 = k4_functor0 X0 X1 X2 X3 X4) \end{aligned} \quad (3)$$

Assume the following.

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

Assume the following.

$$\forall X0.(l2_altcat_1 X0)\Rightarrow(l1_altcat_1 X0) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((v2_altcat_1 X0)\wedge((v11_altcat_1 \\ & X0)\wedge((v12_altcat_1 X0)\wedge(l2_altcat_1 X0)))))\Rightarrow(\forall X1.((\neg \\ & v2_struct_0 X1)\wedge((v2_altcat_1 X1)\wedge((v11_altcat_1 X1)\wedge((v12_altcat_1 \\ & X1)\wedge(l2_altcat_1 X1)))))\Rightarrow(\forall X2.(l2_functor0 X2 X0 X1)\Rightarrow \\ & (\forall X3.((\neg v2_struct_0 X3)\wedge((v2_altcat_1 X3)\wedge((v11_altcat_1 \\ & X3)\wedge((v12_altcat_1 X3)\wedge(l2_altcat_1 X3)))))\Rightarrow(\forall X4.((\neg \\ & v2_struct_0 X4)\wedge((v2_altcat_1 X4)\wedge((v11_altcat_1 X4)\wedge((v12_altcat_1 \\ & X4)\wedge(l2_altcat_1 X4)))))\Rightarrow((r3_yellow20 X0 X1 X2 X3 X4)\Leftrightarrow(((v2_altcat_1 \\ & X3)\wedge((v3_altcat_2 X3 X0)\wedge(m1_altcat_2 X3 X0))\wedge(((v2_altcat_1 \\ & X4)\wedge((v3_altcat_2 X4 X1)\wedge(m1_altcat_2 X4 X1))))\wedge(\exists X5.(\\ & (v16_functor0 X5 X3 X4)\wedge(m2_functor0 X5 X3 X4)\wedge((v21_functor0 \\ & X5 X3 X4)\wedge((\forall X6.(m1_subset_1 X6 (u1_struct_0 X3))\Rightarrow(\forall X7. \\ & (m1_subset_1 X7 (u1_struct_0 X0))\Rightarrow((X6 = X7)\Rightarrow(k3_functor0 X3 X4 \\ & X5 X6 = k3_functor0 X0 X1 X2 X7))))\wedge(\forall X6.(m1_subset_1 X6 (\\ & u1_struct_0 X3))\Rightarrow(\forall X7.(m1_subset_1 X7 (u1_struct_0 X3))\Rightarrow \\ & (\forall X8.(m1_subset_1 X8 (u1_struct_0 X0))\Rightarrow(\forall X9.(m1_subset_1 \\ & X9 (u1_struct_0 X0))\Rightarrow(((X6 = X8)\wedge(X7 = X9))\Rightarrow((k1_altcat_1 X3 X6 \\ & X7 = k1_xboole_0)\vee(\forall X10.(m1_subset_1 X10 (k1_altcat_1 \\ & X3 X6 X7))\Rightarrow(\forall X11.(m1_subset_1 X11 (k1_altcat_1 X0 X8 X9))\Rightarrow \\ & ((X10 = X11)\Rightarrow(k8_functor0 X3 X4 X5 X6 X7 X10 = k1_funct_1 (k4_functor0 \\ & X0 X1 X2 X8 X9) X11)))))))))))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l1_altcat_1 X0))\Rightarrow(\forall X1. \\ & ((\neg v2_struct_0 X1)\wedge(l1_altcat_1 X1))\Rightarrow(\forall X2.((v11_functor0 \\ & X2 X0 X1)\wedge(l2_functor0 X2 X0 X1))\Rightarrow((v8_functor0 X2 X0 X1)\Leftrightarrow(\forall X3. \\ & (m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(\forall X4.(m1_subset_1 X4 \\ & (u1_struct_0 X0))\Rightarrow(\neg(k1_altcat_1 X0 X3 X4\neq k1_xboole_0)\wedge(k1_altcat_1 \\ & X1 (k3_functor0 X0 X1 X2 X4) (k3_functor0 X0 X1 X2 X3) = k1_xboole_0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_altcat_1 X1)) \Rightarrow (\forall X2.((v11_functor0 \\
& X2 X0 X1) \wedge (l2_functor0 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (\\
& u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& (\neg(k1_altcat_1 X0 X3 X4 \neq k1_xboole_0) \wedge ((k1_altcat_1 X1 (k3_functor0 \\
& X0 X1 X2 X4) (k3_functor0 X0 X1 X2 X3) \neq k1_xboole_0) \wedge (\neg \forall X5. \\
& (m1_subset_1 X5 (k1_altcat_1 X0 X3 X4)) \Rightarrow (k8_functor0 X0 X1 X2 X3 \\
& X4 X5 = k1_funct_1 (k7_functor0 X0 X1 X2 X3 X4) X5))))))))) \\
& \tag{8}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v16_functor0 X2 X0 X1) \Rightarrow ((v11_functor0 X2 X0 X1) \wedge (v14_functor0 \\
& X2 X0 X1)))) \\
& \tag{9}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2.(m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1))) \\
& \tag{10}
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\
& X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\
& \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\
& X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow (\forall X2.((v16_functor0 X2 X0 X1) \wedge \\
& (m2_functor0 X2 X0 X1)) \Rightarrow ((v21_functor0 X2 X0 X1) \Rightarrow (r3_yellow20 \\
& X0 X1 X2 X0 X1))))
\end{aligned}$$