

t17_yellow18 (TMK-
ifEFDsy8FS8CXUG6TNiTJVJEpWyY9FaZ)

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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 $r2_yellow18 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_functor0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v21_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_yellow18 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $v1_altcat_2 : \iota \Rightarrow o$ be given. Let $v8_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l2_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k13_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $v16_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_functor3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v9_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v12_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\ \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\ X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow ((r2_yellow18 X0 X1) \Rightarrow (v21_functor0 \\ (k2_yellow18 X0 X1) X0 X1))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l1_altcat_1 X0)) \Rightarrow (\forall X1. \\ ((\neg v2_struct_0 X1) \wedge ((v1_altcat_2 X1) \wedge (l1_altcat_1 X1))) \Rightarrow (\forall X2. \\ ((\neg v2_struct_0 X2) \wedge ((v1_altcat_2 X2) \wedge (l1_altcat_1 X2))) \Rightarrow (\forall X3. \\ ((v8_functor0 X3 X0 X1) \wedge (l2_functor0 X3 X0 X1)) \Rightarrow (\forall X4.(l2_functor0 \\ X4 X1 X2) \Rightarrow (((v21_functor0 X3 X0 X1) \wedge (v21_functor0 X4 X1 X2)) \Rightarrow (v21_functor0 \\ (k13_functor0 X0 X1 X2 X3 X4) X0 X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1.(((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\ ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\ ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow \\ ((r2_functor0 X0 X1) \Rightarrow (r2_functor0 X1 X0)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\ & ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\ & ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow \\ & ((r1_functor0 X0 X1) \Rightarrow (r1_functor0 X1 X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\ & X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\ & (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge \\ & (l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 X2) \wedge ((v12_altcat_1 X2) \wedge \\ & (l2_altcat_1 X2)))) \wedge (((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 \\ & X0 X1)) \wedge ((v16_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)))))) \Rightarrow (\\ & k3_functor3 X0 X1 X2 X3 X4 = k13_functor0 X0 X1 X2 X3 X4) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\ & X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\ & (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge \\ & (l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 X2) \wedge ((v12_altcat_1 X2) \wedge \\ & (l2_altcat_1 X2)))) \wedge (((v16_functor0 X3 X0 X1) \wedge (m2_functor0 X3 \\ & X0 X1)) \wedge ((v16_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)))))) \Rightarrow (\\ & k2_functor3 X0 X1 X2 X3 X4 = k13_functor0 X0 X1 X2 X3 X4) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\ & ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\ & ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2. (m2_functor0 \\ & X2 X0 X1) \Rightarrow (l2_functor0 X2 X0 X1)) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0. (l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\ & X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\ & (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge \\ & (l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 X2) \wedge ((v12_altcat_1 X2) \wedge \\ & (l2_altcat_1 X2)))) \wedge (((v15_functor0 X3 X0 X1) \wedge (m2_functor0 X3 \\ & X0 X1)) \wedge ((v16_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)))))) \Rightarrow (\\ & (v9_functor0 (k3_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge ((v16_functor0 \\ & (k3_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge (m2_functor0 (k3_functor3 X0 \\ & X1 X2 X3 X4) X0 X2))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v11_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\
& ((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((\\
& v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow ((v9_functor0 (k2_yellow18 \\
& X0 X1) X0 X1) \wedge ((v16_functor0 (k2_yellow18 X0 X1) X0 X1) \wedge (m2_functor0 \\
& (k2_yellow18 X0 X1) X0 X1)))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\
& X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge \\
& (((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v12_altcat_1 X1) \wedge (\\
& l2_altcat_1 X1)))) \wedge (((\neg v2_struct_0 X2) \wedge ((v12_altcat_1 X2) \wedge \\
& (l2_altcat_1 X2)))) \wedge (((v16_functor0 X3 X0 X1) \wedge (m2_functor0 X3 \\
& X0 X1) \wedge ((v16_functor0 X4 X1 X2) \wedge (m2_functor0 X4 X1 X2)))))) \Rightarrow (\\
& (v9_functor0 (k2_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge ((v15_functor0 \\
& (k2_functor3 X0 X1 X2 X3 X4) X0 X2) \wedge (m2_functor0 (k2_functor3 X0 \\
& X1 X2 X3 X4) X0 X2)))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow ((r2_functor0 X0 \\
& X1) \Leftrightarrow (\exists X2. (m2_functor0 X2 X0 X1) \wedge ((v21_functor0 X2 X0 X1) \wedge \\
& (v16_functor0 X2 X0 X1))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v12_altcat_1 \\
& X0) \wedge (l2_altcat_1 X0)))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((v2_altcat_1 \\
& X1) \wedge ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow ((r1_functor0 X0 \\
& X1) \Leftrightarrow (\exists X2. (m2_functor0 X2 X0 X1) \wedge ((v21_functor0 X2 X0 X1) \wedge \\
& (v15_functor0 X2 X0 X1))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0. (l2_altcat_1 X0) \Rightarrow (((\neg v2_struct_0 X0) \wedge (v12_altcat_1 \\
& X0)) \Rightarrow ((\neg v2_struct_0 X0) \wedge (v1_altcat_2 X0)))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge \\
& ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))) \wedge ((\neg v2_struct_0 X1) \wedge \\
& ((v12_altcat_1 X1) \wedge (l2_altcat_1 X1)))) \Rightarrow (\forall X2. (m2_functor0 \\
& X2 X0 X1) \Rightarrow ((v8_functor0 X2 X0 X1) \wedge (v12_functor0 X2 X0 X1)))
\end{aligned} \tag{15}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_altcat_1 X0) \wedge ((v11_altcat_1 \\ & \quad X0) \wedge ((v12_altcat_1 X0) \wedge (l2_altcat_1 X0)))))) \Rightarrow (\forall X1.((\\ \neg v2_struct_0 X1) \wedge ((v2_altcat_1 X1) \wedge ((v11_altcat_1 X1) \wedge ((v12_altcat_1 \\ & \quad X1) \wedge (l2_altcat_1 X1)))))) \Rightarrow (\forall X2.((\neg v2_struct_0 X2) \wedge ((\\ & \quad v2_altcat_1 X2) \wedge ((v11_altcat_1 X2) \wedge ((v12_altcat_1 X2) \wedge (l2_altcat_1 \\ X2)))))) \Rightarrow ((r2_yellow18 X0 X1) \Rightarrow ((r1_functor0 X0 X2) \Leftrightarrow (r2_functor0 \\ & \quad X1 X2)))) \end{aligned}$$