

t5\_yellow20

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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  $m2\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v21\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k13\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_functor0 : \iota \Rightarrow \iota$  be given. Let  $g2\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v8\_functor0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l2\_functor0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_functor0 : \iota \Rightarrow \iota$  be given. Let  $l1\_altcat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_altcat\_2 : \iota \Rightarrow o$  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.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v12\_altcat\_1 \\ & X0) \wedge (l2\_altcat\_1 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v12\_altcat\_1 \\ & X1) \wedge (l2\_altcat\_1 X1))) \Rightarrow (\forall X2.((v8\_functor0 X2 X0 X1) \wedge ( \\ & l2\_functor0 X2 X0 X1)) \Rightarrow (k13\_functor0 X0 X0 X1 (k12\_functor0 X0 \\ & X2 = g2\_functor0 X0 X1 (u1\_functor0 X0 X1 X2) (u2\_functor0 X0 X1 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge (l2\_altcat\_1 \\ & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 \\ & X1))) \Rightarrow (\forall X2.((v8\_functor0 X2 X0 X1) \wedge (l2\_functor0 X2 X0 X1)) \Rightarrow \\ & (k13\_functor0 X0 X1 X1 X2 (k11\_functor0 X1) = g2\_functor0 X0 X1 (u1\_functor0 \\ & X0 X1 X2) (u2\_functor0 X0 X1 X2)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v12\_altcat\_1 \\ & X0) \wedge (l2\_altcat\_1 X0)))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 \\ & X1) \wedge ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2.((v8\_functor0 \\ & X2 X0 X1) \wedge (l2\_functor0 X2 X0 X1)) \Rightarrow ((v21\_functor0 X2 X0 X1) \Rightarrow ((v21\_functor0 \\ & (k15\_functor0 X0 X1 X2) X1 X0) \wedge (v8\_functor0 (k15\_functor0 X0 X1 \\ & X2) X1 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_altcat\_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge ((v1\_altcat\_2 X1) \wedge (l1\_altcat\_1 X1))) \Rightarrow (\forall X2. \\
& ((\neg v2\_struct\_0 X2) \wedge ((v1\_altcat\_2 X2) \wedge (l1\_altcat\_1 X2))) \Rightarrow (\forall X3. \\
& ((\neg v2\_struct\_0 X3) \wedge ((v1\_altcat\_2 X3) \wedge (l1\_altcat\_1 X3))) \Rightarrow (\forall X4. \\
& ((v8\_functor0 X4 X0 X1) \wedge (l2\_functor0 X4 X0 X1)) \Rightarrow (\forall X5.(( \\
& v8\_functor0 X5 X1 X2) \wedge (l2\_functor0 X5 X1 X2)) \Rightarrow (\forall X6.(l2\_functor0 \\
& X6 X2 X3) \Rightarrow (k13\_functor0 X0 X1 X3 X4 (k13\_functor0 X1 X2 X3 X5 X6) = k13\_functor0 \\
& X0 X2 X3 (k13\_functor0 X0 X1 X2 X4 X5) X6)))))) \\
& \tag{4}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v12\_altcat\_1 \\
& X0) \wedge ((v1\_altcat\_2 X0) \wedge (l2\_altcat\_1 X0)))))) \Rightarrow (\forall X1.((\neg \\
& v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 X1) \wedge ((v12\_altcat\_1 X1) \wedge ((v1\_altcat\_2 \\
& X1) \wedge (l2\_altcat\_1 X1)))))) \Rightarrow (\forall X2.((v8\_functor0 X2 X0 X1) \wedge \\
& (l2\_functor0 X2 X0 X1)) \Rightarrow ((v21\_functor0 X2 X0 X1) \Rightarrow (\forall X3.( \\
& (v8\_functor0 X3 X1 X0) \wedge (l2\_functor0 X3 X1 X0)) \Rightarrow ((g2\_functor0 X1 \\
& X0 (u1\_functor0 X1 X0 X3) (u2\_functor0 X1 X0 X3) = k15\_functor0 X0 \\
& X1 X2) \Rightarrow (k13\_functor0 X1 X0 X1 X3 X2 = k12\_functor0 X1)))))) \\
& \tag{5}
\end{aligned}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \Rightarrow (k12\_functor0 X0 = k11\_functor0 X0) \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\
& ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \wedge ((\neg v2\_struct\_0 X1) \wedge \\
& ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2.(m2\_functor0 \\
& X2 X0 X1) \Rightarrow (l2\_functor0 X2 X0 X1)) \\
& \tag{7}
\end{aligned}$$

Assume the following.

$$\forall X0.(l2\_altcat\_1 X0) \Rightarrow (l1\_altcat\_1 X0) \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge (l1\_altcat\_1 \\
& X0)) \wedge (((\neg v2\_struct\_0 X1) \wedge (l1\_altcat\_1 X1)) \wedge (l2\_functor0 X2 \\
& X0 X1))) \Rightarrow ((v9\_functor0 (k15\_functor0 X0 X1 X2) X1 X0) \wedge (l2\_functor0 \\
& (k15\_functor0 X0 X1 X2) X1 X0)) \\
& \tag{9}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge \\
& ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0)))) \wedge ((\neg v2\_struct\_0 X1) \wedge \\
& ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1)))) \Rightarrow (\forall X2.(m2\_functor0 \\
& X2 X0 X1) \Rightarrow ((v8\_functor0 X2 X0 X1) \wedge (v12\_functor0 X2 X0 X1))) \\
& \tag{10}
\end{aligned}$$

Assume the following.

$$\forall X0.(l2\_altcat\_1 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v12\_altcat\_1 X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge (v1\_altcat\_2 X0))) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l1\_altcat\_1 X0) \wedge ((l1\_altcat\_1 X1) \wedge (l2\_functor0 X2 X0 X1))) \Rightarrow ((v9\_functor0 X2 X0 X1) \Rightarrow (X2 = g2\_functor0 X0 X1 (u1\_functor0 X0 X1 X2) (u2\_functor0 X0 X1 X2))) \quad (12)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_altcat\_1 X0) \wedge ((v11\_altcat\_1 X0) \wedge ((v12\_altcat\_1 X0) \wedge (l2\_altcat\_1 X0))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_altcat\_1 X1) \wedge ((v11\_altcat\_1 X1) \wedge ((v12\_altcat\_1 X1) \wedge (l2\_altcat\_1 X1))))) \Rightarrow (\forall X2.(m2\_functor0 X2 X0 X1) \Rightarrow ((v21\_functor0 X2 X0 X1) \Rightarrow (\forall X3.(m2\_functor0 X3 X1 X0) \Rightarrow ((k13\_functor0 X0 X1 X0 X2 X3 = k12\_functor0 X0) \Rightarrow (g2\_functor0 X1 X0 (u1\_functor0 X1 X0 X3) (u2\_functor0 X1 X0 X3) = k15\_functor0 X0 X1 X2)))))) \end{aligned}$$