

t37\_isocat\_1 (TM-  
cWM5zeANCA7ZhHrNACzCWma1reF2MRiMp)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v5\_cat\_1 : \iota \Rightarrow o$  be given. Let  $v6\_cat\_1 : \iota \Rightarrow o$  be given. Let  $l1\_cat\_1 : \iota \Rightarrow o$  be given. Let  $m2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k6\_isocat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_cat\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_isocat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_isocat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
 & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
 & X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\
 & \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
 & X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\
 & (m2\_cat\_1 X2 X0 X1) \Rightarrow (\forall X3.(m2\_cat\_1 X3 X0 X1) \Rightarrow (\forall X4. \\
 & (m2\_nattra\_1 X4 X0 X1 X2 X3) \Rightarrow ((r2\_nattra\_1 X0 X1 X2 X3) \Rightarrow (r2\_funct\_2 \\
 & (u1\_struct\_0 X0) (u4\_struct\_0 X1) (k4\_isocat\_1 X0 X1 X1 X2 X3 X4 ( \\
 & k10\_cat\_1 X1) X4))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\
& \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\
& ((\neg v2\_struct\_0 X2) \wedge ((\neg v11\_struct\_0 X2) \wedge ((v2\_cat\_1 X2) \wedge ((v3\_cat\_1 \\
& X2) \wedge ((v4\_cat\_1 X2) \wedge ((v5\_cat\_1 X2) \wedge ((v6\_cat\_1 X2) \wedge (l1\_cat\_1 \\
& X2))))))) \Rightarrow (\forall X3.(m2\_cat\_1 X3 X0 X1) \Rightarrow (\forall X4.(m2\_cat\_1 \\
& X4 X1 X2) \Rightarrow (r2\_funct\_2 (u1\_struct\_0 X0) (u4\_struct\_0 X2) (k5\_isocat\_1 \\
& X0 X1 X2 X4 X4 X3 (k6\_nattr\_1 X1 X2 X4)) (k6\_nattr\_1 X0 X2 (k9\_cat\_1 \\
& X0 X1 X2 X3 X4))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\
& \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2\_cat\_1 X2 X0 X1) \Rightarrow (\forall X3.(m2\_cat\_1 X3 X0 X1) \Rightarrow ((r2\_nattr\_1 \\
& X0 X1 X2 X3) \Rightarrow (\forall X4.(m2\_nattr\_1 X4 X0 X1 X2 X3) \Rightarrow ((r2\_funct\_2 \\
& (u1\_struct\_0 X0) (u4\_struct\_0 X1) (k7\_nattr\_1 X0 X1 X2 X3 X3 X4 ( \\
& k6\_nattr\_1 X0 X1 X3)) X4) \wedge (r2\_funct\_2 (u1\_struct\_0 X0) (u4\_struct\_0 \\
& X1) (k7\_nattr\_1 X0 X1 X2 X2 X3 (k6\_nattr\_1 X0 X1 X2) X4) X4))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\
& X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\
& X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\
& \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\
& X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\
& ((\neg v2\_struct\_0 X2) \wedge ((\neg v11\_struct\_0 X2) \wedge ((v2\_cat\_1 X2) \wedge ((v3\_cat\_1 \\
& X2) \wedge ((v4\_cat\_1 X2) \wedge ((v5\_cat\_1 X2) \wedge ((v6\_cat\_1 X2) \wedge (l1\_cat\_1 \\
& X2))))))) \Rightarrow (\forall X3.(m2\_cat\_1 X3 X0 X1) \Rightarrow (\forall X4.(m2\_cat\_1 \\
& X4 X0 X1) \Rightarrow (\forall X5.(m2\_cat\_1 X5 X1 X2) \Rightarrow (\forall X6.(m2\_cat\_1 \\
& X6 X1 X2) \Rightarrow (((r2\_nattr\_1 X0 X1 X3 X4) \wedge (r2\_nattr\_1 X1 X2 X5 X6)) \Rightarrow \\
& (r2\_nattr\_1 X0 X2 (k9\_cat\_1 X0 X1 X2 X3 X5) (k9\_cat\_1 X0 X1 X2 X4 X6))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 \\ & X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge((( \\ & \neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 \\ & X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 \\ & X1))))))))\wedge((m2\_cat\_1 X2 X0 X1)\wedge(m2\_cat\_1 X3 X0 X1)))\Rightarrow(r2\_nattra\_1 \\ & X0 X1 X2 X2) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2)\wedge \\ & ((v1\_funct\_2 X2 X0 X1)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1))))\wedge((v1\_funct\_1 X3)\wedge((v1\_funct\_2 X3 X0 X1)\wedge(m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))))))\Rightarrow((r2\_funct\_2 X0 X1 X2 \\ & X3)\Leftrightarrow(X2 = X3)) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\ & X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 \\ & X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge \\ & ((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 \\ & X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\wedge(m2\_cat\_1 \\ & X2 X0 X1))\Rightarrow(k6\_nattra\_1 X0 X1 X2 = k3\_nattra\_1 X0 X1 X2) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 \\ & X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge((( \\ & \neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 \\ & X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 \\ & X1))))))))\wedge((m2\_cat\_1 X2 X0 X1)\wedge(m2\_cat\_1 X3 X0 X1)))\Rightarrow(\forall X4. \\ & (m2\_nattra\_1 X4 X0 X1 X2 X3)\Rightarrow(m1\_nattra\_1 X4 X0 X1 X2 X3)) \end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 \\ & X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge((( \\ & \neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 \\ & X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 \\ & X1))))))))\wedge((m2\_cat\_1 X2 X0 X1)\wedge(m2\_cat\_1 X3 X0 X1)))\Rightarrow(\forall X4. \\ & (m1\_nattra\_1 X4 X0 X1 X2 X3)\Rightarrow((v1\_funct\_1 X4)\wedge((v1\_funct\_2 X4 ( \\ & u1\_struct\_0 X0) (u4\_struct\_0 X1))\wedge(m1\_subset\_1 X4 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u4\_struct\_0 X1)))))) \end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((\neg v2\_struct\_0 \\
& X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 \\
& X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge((( \\
& \neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 \\
& X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 \\
& X1))))))))\wedge(((\neg v2\_struct\_0 X2)\wedge((\neg v11\_struct\_0 X2)\wedge((v2\_cat\_1 \\
& X2)\wedge((v3\_cat\_1 X2)\wedge((v4\_cat\_1 X2)\wedge((v5\_cat\_1 X2)\wedge((v6\_cat\_1 \\
& X2)\wedge(l1\_cat\_1 X2))))))))\wedge((m2\_cat\_1 X3 X0 X1)\wedge(m2\_cat\_1 X4 X1 \\
& X2))))\Rightarrow(m2\_cat\_1 (k9\_cat\_1 X0 X1 X2 X3 X4) X0 X2)
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\
& X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 \\
& X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge \\
& ((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 \\
& X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\wedge(m2\_cat\_1 \\
& X2 X0 X1)))\Rightarrow(m2\_nattr\_1 (k6\_nattr\_1 X0 X1 X2) X0 X1 X2 X2)
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 \\
& X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 \\
& X0)\wedge(l1\_cat\_1 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 \\
& X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 \\
& X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\wedge(((\neg v2\_struct\_0 X2)\wedge \\
& ((\neg v11\_struct\_0 X2)\wedge((v2\_cat\_1 X2)\wedge((v3\_cat\_1 X2)\wedge((v4\_cat\_1 \\
& X2)\wedge((v5\_cat\_1 X2)\wedge((v6\_cat\_1 X2)\wedge(l1\_cat\_1 X2))))))))\wedge((m2\_cat\_1 \\
& X3 X1 X2)\wedge((m2\_cat\_1 X4 X1 X2)\wedge((m2\_cat\_1 X5 X0 X1)\wedge(m2\_nattr\_1 \\
& X6 X1 X2 X3 X4))))))\Rightarrow(m2\_nattr\_1 (k5\_isocat\_1 X0 X1 X2 X3 X4 X5 X6) \\
& X0 X2 (k9\_cat\_1 X0 X1 X2 X5 X3) (k9\_cat\_1 X0 X1 X2 X5 X4))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 \\
& X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 \\
& X0)\wedge(l1\_cat\_1 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge((\neg v11\_struct\_0 \\
& X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 X1)\wedge((v5\_cat\_1 \\
& X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\wedge(((\neg v2\_struct\_0 X2)\wedge \\
& ((\neg v11\_struct\_0 X2)\wedge((v2\_cat\_1 X2)\wedge((v3\_cat\_1 X2)\wedge((v4\_cat\_1 \\
& X2)\wedge((v5\_cat\_1 X2)\wedge((v6\_cat\_1 X2)\wedge(l1\_cat\_1 X2))))))))\wedge((m2\_cat\_1 \\
& X3 X0 X1)\wedge((m2\_cat\_1 X4 X0 X1)\wedge((m2\_nattra\_1 X5 X0 X1 X3 X4)\wedge(m2\_cat\_1 \\
& X6 X1 X2))))))\Rightarrow(m2\_nattra\_1 (k4\_isocat\_1 X0 X1 X2 X3 X4 X5 X6) X0 \\
& X2 (k9\_cat\_1 X0 X1 X2 X3 X6) (k9\_cat\_1 X0 X1 X2 X4 X6))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 \\
& X0)\wedge((v2\_cat\_1 X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 \\
& X0)\wedge((v6\_cat\_1 X0)\wedge(l1\_cat\_1 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge \\
& ((\neg v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 \\
& X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\wedge(m2\_cat\_1 \\
& X2 X0 X1))\Rightarrow(m1\_nattra\_1 (k3\_nattra\_1 X0 X1 X2) X0 X1 X2 X2)
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 \\
& X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 \\
& X0)\wedge(l1\_cat\_1 X0))))))))\Rightarrow(m2\_cat\_1 (k10\_cat\_1 X0) X0 X0)
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_cat\_1 \\
& X0)\wedge((v3\_cat\_1 X0)\wedge((v4\_cat\_1 X0)\wedge((v5\_cat\_1 X0)\wedge((v6\_cat\_1 \\
& X0)\wedge(l1\_cat\_1 X0))))))))\Rightarrow(\forall X1.((\neg v2\_struct\_0 X1)\wedge((\neg \\
& v11\_struct\_0 X1)\wedge((v2\_cat\_1 X1)\wedge((v3\_cat\_1 X1)\wedge((v4\_cat\_1 \\
& X1)\wedge((v5\_cat\_1 X1)\wedge((v6\_cat\_1 X1)\wedge(l1\_cat\_1 X1))))))))\Rightarrow(\forall X2. \\
& ((\neg v2\_struct\_0 X2)\wedge((\neg v11\_struct\_0 X2)\wedge((v2\_cat\_1 X2)\wedge((v3\_cat\_1 \\
& X2)\wedge((v4\_cat\_1 X2)\wedge((v5\_cat\_1 X2)\wedge((v6\_cat\_1 X2)\wedge(l1\_cat\_1 \\
& X2))))))))\Rightarrow(\forall X3.(m2\_cat\_1 X3 X0 X1)\Rightarrow(\forall X4.(m2\_cat\_1 \\
& X4 X0 X1)\Rightarrow(\forall X5.(m2\_cat\_1 X5 X1 X2)\Rightarrow(\forall X6.(m2\_cat\_1 \\
& X6 X1 X2)\Rightarrow(\forall X7.(m2\_nattra\_1 X7 X0 X1 X3 X4)\Rightarrow(\forall X8.( \\
& m2\_nattra\_1 X8 X1 X2 X5 X6)\Rightarrow(k6\_isocat\_1 X0 X1 X2 X3 X4 X5 X6 X7 X8 = k7\_nattra\_1 \\
& X0 X2 (k9\_cat\_1 X0 X1 X2 X3 X5) (k9\_cat\_1 X0 X1 X2 X4 X5) (k9\_cat\_1 X0 \\
& X1 X2 X4 X6) (k4\_isocat\_1 X0 X1 X2 X3 X4 X7 X5) (k5\_isocat\_1 X0 X1 X2 X5 \\
& X6 X4 X8))))))))))
\end{aligned} \tag{16}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\ & \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\ & X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\ & (m2\_cat\_1 X2 X0 X1) \Rightarrow (\forall X3.(m2\_cat\_1 X3 X0 X1) \Rightarrow (\forall X4. \\ & (m2\_nattra\_1 X4 X0 X1 X2 X3) \Rightarrow ((r2\_nattra\_1 X0 X1 X2 X3) \Rightarrow (r2\_funct\_2 \\ & (u1\_struct\_0 X0) (u4\_struct\_0 X1) (k6\_isocat\_1 X0 X1 X1 X2 X3 (k10\_cat\_1 \\ & X1) (k10\_cat\_1 X1) X4 (k6\_nattra\_1 X1 X1 (k10\_cat\_1 X1))) X4)))))) \end{aligned}$$