

t27_isocat_1
(TMLGzHnecQ5ijZw4wB9c8GPt1uh8s8vActR)

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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 $m2_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k4_isocat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k9_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
& v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\
& X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\
& X2))))))) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4.(m2_cat_1 \\
& X4 X1 X2) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (k8_cat_1 \\
& X0 X2 (k9_cat_1 X0 X1 X2 X3 X4) X5 = k8_cat_1 X1 X2 X4 (k8_cat_1 X0 X1 X3 \\
& X5))))))
\end{aligned}
\tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X1 X0) \Rightarrow (\forall X3.(m2_cat_1 X3 X1 X0) \Rightarrow ((r2_nattr_1 \\
& X1 X0 X2 X3) \Rightarrow (\forall X4.(m2_nattr_1 X4 X1 X0 X2 X3) \Rightarrow (\forall X5. \\
& (m2_nattr_1 X5 X1 X0 X2 X3) \Rightarrow ((\forall X6.(m1_subset_1 X6 (u1_struct_0 \\
& X1)) \Rightarrow (k4_nattr_1 X1 X0 X2 X3 X4 X6 = k4_nattr_1 X1 X0 X2 X3 X5 X6)) \Rightarrow \\
& (r2_funct_2 (u1_struct_0 X1) (u4_struct_0 X0) X4 X5))))))))) \tag{2}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X1 X0) \Rightarrow (\forall X3.(m2_cat_1 X3 X1 X0) \Rightarrow (\forall X4. \\
& (m2_cat_1 X4 X1 X0) \Rightarrow ((r2_nattr_1 X1 X0 X2 X3) \wedge (r2_nattr_1 X1 \\
& X0 X3 X4) \Rightarrow (\forall X5.(m2_nattr_1 X5 X1 X0 X2 X3) \Rightarrow (\forall X6. \\
& (m2_nattr_1 X6 X1 X0 X3 X4) \Rightarrow (\forall X7.(m1_subset_1 X7 (u1_struct_0 \\
& X1)) \Rightarrow (k4_nattr_1 X1 X0 X2 X4 (k7_nattr_1 X1 X0 X2 X3 X4 X5 X6) X7 = \\
& k5_cat_1 X0 (k8_cat_1 X1 X0 X2 X7) (k8_cat_1 X1 X0 X3 X7) (k8_cat_1 \\
& X1 X0 X4 X7) (k4_nattr_1 X1 X0 X2 X3 X5 X7) (k4_nattr_1 X1 X0 X3 X4 X6 \\
& X7))))))))) \tag{3}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X1 X0) \Rightarrow (\forall X3.(m2_cat_1 X3 X1 X0) \Rightarrow ((r2_nattr_1 \\
& X1 X0 X2 X3) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (k2_cat_1 \\
& X0 (k8_cat_1 X1 X0 X2 X4) (k8_cat_1 X1 X0 X3 X4) \neq k1_xboole_0)))))) \tag{4}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X0 X1) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4. \\
& (m2_cat_1 X4 X0 X1) \Rightarrow (((r2_nattrra_1 X0 X1 X2 X3) \wedge (r2_nattrra_1 X0 \\
& X1 X3 X4)) \Rightarrow (r2_nattrra_1 X0 X1 X2 X4))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\
& X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\
& X2))))))) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4.(m2_cat_1 \\
& X4 X0 X1) \Rightarrow ((r2_nattrra_1 X0 X1 X3 X4) \Rightarrow (\forall X5.(m2_nattrra_1 X5 \\
& X0 X1 X3 X4) \Rightarrow (\forall X6.(m2_cat_1 X6 X1 X2) \Rightarrow (\forall X7.(m1_subset_1 \\
& X7 (u1_struct_0 X0)) \Rightarrow (k4_nattrra_1 X0 X2 (k9_cat_1 X0 X1 X2 X3 X6) \\
& (k9_cat_1 X0 X1 X2 X4 X6) (k4_isocat_1 X0 X1 X2 X3 X4 X5 X6) X7 = k9_cat_3 \\
& X1 (k8_cat_1 X0 X1 X3 X7) (k8_cat_1 X0 X1 X4 X7) X2 X6 (k4_nattrra_1 X0 \\
& X1 X3 X4 X5 X7))))))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\
& X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\
& X2))))))) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4.(m2_cat_1 \\
& X4 X0 X1) \Rightarrow (\forall X5.(m2_cat_1 X5 X1 X2) \Rightarrow (\forall X6.(m2_cat_1 \\
& X6 X1 X2) \Rightarrow (((r2_nattrra_1 X0 X1 X3 X4) \wedge (r2_nattrra_1 X1 X2 X5 X6)) \Rightarrow \\
& (r2_nattrra_1 X0 X2 (k9_cat_1 X0 X1 X2 X3 X5) (k9_cat_1 X0 X1 X2 X4 X6)))))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 X1 X0) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 X1)) \Rightarrow \\
& (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 \\
& X5 (u1_struct_0 X1)) \Rightarrow (\neg(k2_cat_1 X1 X3 X4 \neq k1_xboole_0) \wedge ((k2_cat_1 \\
& X1 X4 X5 \neq k1_xboole_0) \wedge (\neg \forall X6.(m1_cat_1 X6 X1 X3 X4) \Rightarrow (\forall X7. \\
& (m1_cat_1 X7 X1 X4 X5) \Rightarrow (k9_cat_3 X1 X3 X5 X0 X2 (k5_cat_1 X1 X3 X4 X5 \\
& X6 X7) = k5_cat_1 X0 (k8_cat_1 X1 X0 X2 X3) (k8_cat_1 X1 X0 X2 X4) (k8_cat_1 \\
& X1 X0 X2 X5) (k9_cat_3 X1 X3 X4 X0 X2 X6) (k9_cat_3 X1 X4 X5 X0 X2 X7)))))))))) \\
& \hspace{15em} (8)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 \\
& X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 X0) \wedge (l1_cat_1 X0)))))) \wedge (((\\
& \neg v2_struct_0 X1) \wedge ((\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 \\
& X1) \wedge ((v4_cat_1 X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 \\
& X1)))))) \wedge ((m2_cat_1 X2 X0 X1) \wedge (m2_cat_1 X3 X0 X1))) \Rightarrow (r2_nattra_1 \\
& X0 X1 X2 X2) \\
& \hspace{15em} (9)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 \\
& X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 X0) \wedge (l1_cat_1 X0)))))) \wedge (((\\
& \neg v2_struct_0 X1) \wedge ((\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 \\
& X1) \wedge ((v4_cat_1 X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 \\
& X1)))))) \wedge ((m2_cat_1 X2 X0 X1) \wedge (m2_cat_1 X3 X0 X1))) \Rightarrow (\forall X4. \\
& (m2_nattra_1 X4 X0 X1 X2 X3) \Rightarrow (m1_nattra_1 X4 X0 X1 X2 X3)) \\
& \hspace{15em} (10)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\
& X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 \\
& X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 X0) \wedge (l1_cat_1 X0)))))) \wedge (((\\
& \neg v2_struct_0 X1) \wedge ((\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 \\
& X1) \wedge ((v4_cat_1 X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 \\
& X1)))))) \wedge (((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 \\
& X2) \wedge ((v3_cat_1 X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 \\
& X2) \wedge (l1_cat_1 X2)))))) \wedge ((m2_cat_1 X3 X0 X1) \wedge (m2_cat_1 X4 X1 \\
& X2)))) \Rightarrow (m2_cat_1 (k9_cat_1 X0 X1 X2 X3 X4) X0 X2) \\
& \hspace{15em} (11)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\
& X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 \\
& X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge(((\\
& \neg v2_struct_0 X1)\wedge((\neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 \\
& X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 \\
& X1))))))))\wedge((m2_cat_1 X2 X0 X1)\wedge(m1_subset_1 X3 (u1_struct_0 \\
& X0))))\Rightarrow(m1_subset_1 (k8_cat_1 X0 X1 X2 X3) (u1_struct_0 X1))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\
& X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\
& X0)\wedge(l1_cat_1 X0))))))))\wedge(((\neg v2_struct_0 X1)\wedge((\neg v11_struct_0 \\
& X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 \\
& X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))))\wedge((m2_cat_1 X2 X0 X1)\wedge \\
& ((m2_cat_1 X3 X0 X1)\wedge((m2_cat_1 X4 X0 X1)\wedge((m2_nattra_1 X5 X0 X1 \\
& X2 X3)\wedge(m2_nattra_1 X6 X0 X1 X3 X4))))))\Rightarrow(m2_nattra_1 (k7_nattra_1 \\
& X0 X1 X2 X3 X4 X5 X6) X0 X1 X2 X4)
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 \\
& X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 \\
& X0))))))))\wedge(((\neg v2_struct_0 X1)\wedge((\neg v11_struct_0 X1)\wedge((v2_cat_1 \\
& X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 \\
& X1)\wedge(l1_cat_1 X1))))))))\wedge((m2_cat_1 X2 X0 X1)\wedge((m2_cat_1 X3 X0 \\
& X1)\wedge((m1_nattra_1 X4 X0 X1 X2 X3)\wedge(m1_subset_1 X5 (u1_struct_0 \\
& X0))))))\Rightarrow(m1_cat_1 (k4_nattra_1 X0 X1 X2 X3 X4 X5) X1 (k8_cat_1 \\
& X0 X1 X2 X5) (k8_cat_1 X0 X1 X3 X5))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& \forall X6.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\
& X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\
& X0)\wedge(l1_cat_1 X0))))))))\wedge(((\neg v2_struct_0 X1)\wedge((\neg v11_struct_0 \\
& X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 \\
& X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))))\wedge(((\neg v2_struct_0 X2)\wedge \\
& ((\neg v11_struct_0 X2)\wedge((v2_cat_1 X2)\wedge((v3_cat_1 X2)\wedge((v4_cat_1 \\
& X2)\wedge((v5_cat_1 X2)\wedge((v6_cat_1 X2)\wedge(l1_cat_1 X2))))))))\wedge((m2_cat_1 \\
& X3 X0 X1)\wedge((m2_cat_1 X4 X0 X1)\wedge((m2_nattra_1 X5 X0 X1 X3 X4)\wedge(m2_cat_1 \\
& X6 X1 X2))))\Rightarrow(m2_nattra_1 (k4_isocat_1 X0 X1 X2 X3 X4 X5 X6) X0 \\
& X2 (k9_cat_1 X0 X1 X2 X3 X6) (k9_cat_1 X0 X1 X2 X4 X6))
\end{aligned} \tag{15}$$

Assume the following.

$$k1_xboole_0 = the (\lambda X0 : \iota.v1_xboole_0 X0) \quad (16)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0)))))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((\neg \\ & v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))))) \Rightarrow (\forall X2. \\ & ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\ & X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\ & X2)))))))) \Rightarrow (\forall X3. (m2_cat_1 X3 X1 X2) \Rightarrow (\forall X4. (m2_cat_1 \\ & X4 X1 X2) \Rightarrow (\forall X5. (m2_cat_1 X5 X1 X2) \Rightarrow (\forall X6. (m2_cat_1 \\ & X6 X2 X0) \Rightarrow (\forall X7. (m2_nattr_1 X7 X1 X2 X3 X4) \Rightarrow (\forall X8. (\\ & m2_nattr_1 X8 X1 X2 X4 X5) \Rightarrow (((r2_nattr_1 X1 X2 X3 X4) \wedge (r2_nattr_1 \\ & X1 X2 X4 X5) \Rightarrow (r2_funct_2 (u1_struct_0 X1) (u4_struct_0 X0) (k4_isocat_1 \\ & X1 X2 X0 X3 X5 (k7_nattr_1 X1 X2 X3 X4 X5 X7 X8) X6) (k7_nattr_1 X1 X0 \\ & (k9_cat_1 X1 X2 X0 X3 X6) (k9_cat_1 X1 X2 X0 X4 X6) (k9_cat_1 X1 X2 X0 \\ & X5 X6) (k4_isocat_1 X1 X2 X0 X3 X4 X7 X6) (k4_isocat_1 X1 X2 X0 X4 X5 X8 \\ & X6)))))))))))))) \end{aligned}$$