

t24_isocat_1

(TMLZ68efAQ7eFrSi7irsh7YrsTWdUCqyBG7)

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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 $r2_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k4_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_isocat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_isocat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $m1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
 & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
 & X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
 & v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
 & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
 & ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\
 & X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\
 & X2))))))) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4.(m2_cat_1 \\
 & X4 X0 X1) \Rightarrow ((r1_nattr_1 X0 X1 X3 X4) \Rightarrow (\forall X5.(m2_cat_1 X5 X2 \\
 & X0) \Rightarrow (\forall X6.(m1_nattr_1 X6 X0 X1 X3 X4) \Rightarrow (\forall X7.(m1_subset_1 \\
 & X7 (u1_struct_0 X2) \Rightarrow (k4_nattr_1 X2 X1 (k9_cat_1 X2 X0 X1 X5 X3) \\
 & (k9_cat_1 X2 X0 X1 X5 X4) (k3_isocat_1 X2 X0 X1 X3 X4 X5 X6) X7 = k4_nattr_1 \\
 & X0 X1 X3 X4 X6 (k8_cat_1 X2 X0 X5 X7))))))))))
 \end{aligned}$$

(1)

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 \\ & X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))\wedge(((\\ & \neg v2_struct_0 X1)\wedge((\neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 \\ & X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 \\ & X1))))))\wedge((m2_cat_1 X2 X0 X1)\wedge(m2_cat_1 X3 X0 X1)))\Rightarrow(\forall X4. \\ & (m2_nattra_1 X4 X0 X1 X2 X3)\Rightarrow(m1_nattra_1 X4 X0 X1 X2 X3)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ & X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ & X0)\wedge(l1_cat_1 X0))))))\Rightarrow(\forall X1.((\neg v2_struct_0 X1)\wedge((\\ & \neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 \\ & X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))\Rightarrow(\forall X2. \\ & ((\neg v2_struct_0 X2)\wedge((\neg v11_struct_0 X2)\wedge((v2_cat_1 X2)\wedge((v3_cat_1 \\ & X2)\wedge((v4_cat_1 X2)\wedge((v5_cat_1 X2)\wedge((v6_cat_1 X2)\wedge(l1_cat_1 \\ & X2))))))\Rightarrow(\forall X3.(m2_cat_1 X3 X1 X2)\Rightarrow(\forall X4.(m2_cat_1 \\ & X4 X1 X2)\Rightarrow((r2_nattra_1 X1 X2 X3 X4)\Rightarrow(\forall X5.(m2_cat_1 X5 X0 \\ & X1)\Rightarrow(\forall X6.(m2_nattra_1 X6 X1 X2 X3 X4)\Rightarrow(k5_isocat_1 X0 X1 \\ & X2 X3 X4 X5 X6 = k3_isocat_1 X0 X1 X2 X3 X4 X5 X6)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ & X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ & X0)\wedge(l1_cat_1 X0))))))\Rightarrow(\forall X1.((\neg v2_struct_0 X1)\wedge((\\ & \neg v11_struct_0 X1)\wedge((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 \\ & X1)\wedge((v5_cat_1 X1)\wedge((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))\Rightarrow(\forall X2. \\ & (m2_cat_1 X2 X0 X1)\Rightarrow(\forall X3.(m2_cat_1 X3 X0 X1)\Rightarrow((r2_nattra_1 \\ & X0 X1 X2 X3)\Leftrightarrow((r1_nattra_1 X0 X1 X2 X3)\wedge(\exists X4.(m1_nattra_1 \\ & X4 X0 X1 X2 X3)\wedge(\forall X5.(m1_subset_1 X5 (u1_struct_0 X0))\Rightarrow(\\ & \forall X6.(m1_subset_1 X6 (u1_struct_0 X0))\Rightarrow((k2_cat_1 X0 X5 \\ & X6\neq k1_xboole_0)\Rightarrow(\forall X7.(m1_cat_1 X7 X0 X5 X6)\Rightarrow(k5_cat_1 \\ & X1 (k8_cat_1 X0 X1 X2 X5) (k8_cat_1 X0 X1 X2 X6) (k8_cat_1 X0 X1 X3 X6) \\ & (k9_cat_3 X0 X5 X6 X1 X2 X7) (k4_nattra_1 X0 X1 X2 X3 X4 X6) = k5_cat_1 \\ & X1 (k8_cat_1 X0 X1 X2 X5) (k8_cat_1 X0 X1 X3 X5) (k8_cat_1 X0 X1 X3 X6) \\ & (k4_nattra_1 X0 X1 X2 X3 X4 X5) (k9_cat_3 X0 X5 X6 X1 X3 X7)))))) \end{aligned} \quad (4)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\ & \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\ & ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_cat_1 X2) \wedge ((v3_cat_1 \\ & X2) \wedge ((v4_cat_1 X2) \wedge ((v5_cat_1 X2) \wedge ((v6_cat_1 X2) \wedge (l1_cat_1 \\ & X2))))))) \Rightarrow (\forall X3.(m2_cat_1 X3 X0 X1) \Rightarrow (\forall X4.(m2_cat_1 \\ & X4 X0 X1) \Rightarrow (r2_nattra_1 X0 X1 X3 X4) \Rightarrow (\forall X5.(m2_cat_1 X5 X2 \\ & X0) \Rightarrow (\forall X6.(m2_nattra_1 X6 X0 X1 X3 X4) \Rightarrow (\forall X7.(m1_subset_1 \\ & X7 (u1_struct_0 X2)) \Rightarrow (k4_nattra_1 X2 X1 (k9_cat_1 X2 X0 X1 X5 X3) \\ & (k9_cat_1 X2 X0 X1 X5 X4) (k5_isocat_1 X2 X0 X1 X3 X4 X5 X6) X7 = k4_nattra_1 \\ & X0 X1 X3 X4 X6 (k8_cat_1 X2 X0 X5 X7)))))))))) \end{aligned}$$