

t7_isocat_2 (TMWPFxdLsS- CsF5YCDHhdkkYVGUnLZtGiqXw)

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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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k11_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k4_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_cat_1 : \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k10_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k10_cat_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $u1_cat_1 : \iota \Rightarrow \iota$ be given. Let $m2_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_nattr_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. \neg (X0 \in X1) \wedge (v1_xboole_0 X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (X0 \in X1) \Rightarrow (m1_subset_1 X0 X1) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\ & ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge \\ & ((v6_cat_1 X0) \wedge (l1_cat_1 X0)))))))) \wedge ((\neg v2_struct_0 X1) \wedge ((\neg \\ & v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 X1) \wedge \\ & ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))))))) \Rightarrow (k4_cat_2 \\ & X0 X1 = k2_cat_2 X0 X1) \end{aligned} \quad (4)$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge \\
& ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge \\
& ((v6_cat_1 X0) \wedge (l1_cat_1 X0))))))) \wedge ((\neg v2_struct_0 X1) \wedge (\neg \\
& v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 X1) \wedge \\
& ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow ((\neg v2_struct_0 \\
& (k11_nattr_1 X0 X1)) \wedge ((\neg v11_struct_0 (k11_nattr_1 X0 X1)) \wedge \\
& ((v1_cat_1 (k11_nattr_1 X0 X1)) \wedge (v2_cat_1 (k11_nattr_1 X0 \\
& X1)) \wedge ((v3_cat_1 (k11_nattr_1 X0 X1)) \wedge ((v4_cat_1 (k11_nattr_1 \\
& X0 X1)) \wedge ((v5_cat_1 (k11_nattr_1 X0 X1)) \wedge ((v6_cat_1 (k11_nattr_1 \\
& X0 X1)) \wedge (l1_cat_1 (k11_nattr_1 X0 X1))))))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((\neg \\
& v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (X2 = k2_cat_2 X0 X1) \Leftrightarrow (\forall X3. (X3 \in X2) \Leftrightarrow (m2_cat_1 X3 X0 X1)))
\end{aligned} \tag{7}$$

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. \\
& ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v1_cat_1 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 ((X2 = k11_nattra_1 X0 X1) \Leftrightarrow ((u1_struct_0 \\
& X2 = k4_cat_2 X0 X1) \wedge ((u4_struct_0 X2 = k10_nattra_1 X0 X1) \wedge ((\forall X3. \\
& (m1_subset_1 X3 (u4_struct_0 X2)) \Rightarrow ((k3_graph_1 X2 X3 = k1_xtuple_0 \\
& (k1_xtuple_0 X3)) \wedge (k4_graph_1 X2 X3 = k2_xtuple_0 (k1_xtuple_0 \\
& X3)))) \wedge ((\forall X3.(m1_subset_1 X3 (u4_struct_0 X2)) \Rightarrow (\forall X4. \\
& (m1_subset_1 X4 (u4_struct_0 X2)) \Rightarrow ((k3_graph_1 X2 X4 = k4_graph_1 \\
& X2 X3) \Rightarrow (k10_cat_2 X2 X2 X4 X3 \in k9_xtuple_0 (u1_cat_1 X2)))))) \wedge ((\\
& \forall X3.(m1_subset_1 X3 (u4_struct_0 X2)) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 (u4_struct_0 X2)) \Rightarrow (\neg (k10_cat_2 X2 X2 X4 X3 \in k9_xtuple_0 (u1_cat_1 \\
& X2)) \wedge (\forall X5.(m2_cat_1 X5 X0 X1) \Rightarrow (\forall X6.(m2_cat_1 X6 \\
& X0 X1) \Rightarrow (\forall X7.(m2_cat_1 X7 X0 X1) \Rightarrow (\forall X8.(m2_nattra_1 \\
& X8 X0 X1 X5 X6) \Rightarrow (\forall X9.(m2_nattra_1 X9 X0 X1 X6 X7) \Rightarrow (\neg (X3 = k4_tarski \\
& (k4_tarski X5 X6) X8) \wedge ((X4 = k4_tarski (k4_tarski X6 X7) X9) \wedge (k1_funct_1 \\
& (u1_cat_1 X2) (k10_cat_2 X2 X2 X4 X3) = k4_tarski (k4_tarski X5 X7) \\
& (k7_nattra_1 X0 X1 X5 X6 X7 X8 X9)))))))))) \wedge (\forall X3.(m1_subset_1 \\
& X3 (u1_struct_0 X2)) \Rightarrow (\forall X4.(m2_cat_1 X4 X0 X1) \Rightarrow ((X4 = X3) \Rightarrow \\
& (k4_cat_1 X2 X3 = k4_tarski (k4_tarski X4 X4) (k6_nattra_1 X0 X1 X4))))))))))))) \\
& \tag{8}
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 (k11_nattra_1 X0 X1))) \Leftrightarrow (m2_cat_1 \\
& X2 X0 X1))
\end{aligned}$$