

t65_cat_1

(TMEhUTMbnnL9ifwQ2SBuV8ohtzjYXcjEFY4)

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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 $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ 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 $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m2_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Assume the

following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))) \Rightarrow (\forall X2. \\
& ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\
& X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
& X0) (u4_struct_0 X1)))))) \Rightarrow (((\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X0)) \Rightarrow (\exists X4.(m1_subset_1 X4 (u1_struct_0 X1)) \wedge (k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 (k4_cat_1 X0 X3) = k4_cat_1 \\
& X1 X4)) \wedge ((\forall X3.(m1_subset_1 X3 (u4_struct_0 X0)) \Rightarrow ((k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 (k4_cat_1 X0 (k3_graph_1 X0 \\
& X3)) = k4_cat_1 X1 (k3_graph_1 X1 (k3_funct_2 (u4_struct_0 X0) (\\
& u4_struct_0 X1) X2 X3))) \wedge (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\
& X1) X2 (k4_cat_1 X0 (k4_graph_1 X0 X3)) = k4_cat_1 X1 (k4_graph_1 \\
& X1 (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 X1) X2 X3)))))) \wedge (\forall X3. \\
& (m1_subset_1 X3 (u4_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 \\
& (u4_struct_0 X0)) \Rightarrow ((k3_graph_1 X0 X4 = k4_graph_1 X0 X3) \Rightarrow (k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 (k1_cat_1 X0 X3 X4) = k1_cat_1 \\
& X1 (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 X1) X2 X3) (k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 X4)))))) \Rightarrow (m2_cat_1 X2 X0 \\
& X1))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 \\
(u1_struct_0 X0)) \tag{2}$$

Assume the following.

$$\forall X0.(l5_struct_0 X0) \Rightarrow (l1_struct_0 X0) \tag{3}$$

Assume the following.

$$\forall X0.(l1_graph_1 X0) \Rightarrow (l5_struct_0 X0) \tag{4}$$

Assume the following.

$$\forall X0.(l1_cat_1 X0) \Rightarrow (l1_graph_1 X0) \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\
& (l1_graph_1 X0))) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (m1_subset_1 \\
& (k4_graph_1 X0 X1) (u1_struct_0 X0))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge \\ & (l1_graph_1 X0)) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (m1_subset_1 \\ & (k3_graph_1 X0 X1) (u1_struct_0 X0)) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0 X0) \wedge \\ & (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1)))) \wedge (m1_subset_1 X3 X0))) \Rightarrow (m1_subset_1 (\\ & k3_funct_2 X0 X1 X2 X3) X1) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((\\ & \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\ & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\ & X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\ & X0) (u4_struct_0 X1)))))) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 \\ & X3 (u1_struct_0 X0) (u1_struct_0 X1)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X1)))))) \Rightarrow (((\forall X4. \\ & (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (k3_funct_2 (u4_struct_0 X0) \\ & (u4_struct_0 X1) X2 (k4_cat_1 X0 X4) = k4_cat_1 X1 (k3_funct_2 (u1_struct_0 \\ & X0) (u1_struct_0 X1) X3 X4))) \wedge ((\forall X4. (m1_subset_1 X4 (u4_struct_0 \\ & X0)) \Rightarrow ((k3_funct_2 (u1_struct_0 X0) (u1_struct_0 X1) X3 (k3_graph_1 \\ & X0 X4) = k3_graph_1 X1 (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ & X1) X2 X4)) \wedge (k3_funct_2 (u1_struct_0 X0) (u1_struct_0 X1) X3 (k4_graph_1 \\ & X0 X4) = k4_graph_1 X1 (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ & X1) X2 X4)))) \wedge (\forall X4. (m1_subset_1 X4 (u4_struct_0 X0)) \Rightarrow (\\ & \forall X5. (m1_subset_1 X5 (u4_struct_0 X0)) \Rightarrow ((k3_graph_1 X0 \\ & X5 = k4_graph_1 X0 X4) \Rightarrow (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ & X1) X2 (k1_cat_1 X0 X4 X5) = k1_cat_1 X1 (k3_funct_2 (u4_struct_0 \\ & X0) (u4_struct_0 X1) X2 X4) (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ & X1) X2 X5)))))) \Rightarrow (m2_cat_1 X2 X0 X1)))) \end{aligned}$$