

t66_cat_3

(TMJWXg2PECpSsVgkk2Ag43QP8oxJJJKnKXz)

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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 $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $m2_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_cat_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Let $k2_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((\neg v2_struct_0 X1) \wedge ((\neg v11_struct_0 X1) \wedge \\
 & ((v2_cat_1 X1) \wedge (v3_cat_1 X1) \wedge (v4_cat_1 X1) \wedge (v5_cat_1 X1) \wedge \\
 & ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))) \Rightarrow (\forall X2. (m1_subset_1 \\
 & X2 (u4_struct_0 X1)) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge (v1_funct_2 \\
 & X3 X0 (u4_struct_0 X1)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\
 & X0 (u4_struct_0 X1)))))) \Rightarrow ((r2_funct_2 X0 (u1_struct_0 X1) (k3_cat_3 \\
 & X1 X0 X3) (k8_funcop_1 (u1_struct_0 X1) X0 (k3_graph_1 X1 X2))) \Rightarrow \\
 & ((r2_funct_2 X0 (u1_struct_0 X1) (k2_cat_3 X1 X0 (k7_cat_3 X1 X0 \\
 & X3 X2)) (k2_cat_3 X1 X0 X3)) \wedge (r2_funct_2 X0 (u1_struct_0 X1) (k3_cat_3 \\
 & X1 X0 (k7_cat_3 X1 X0 X3 X2)) (k8_funcop_1 (u1_struct_0 X1) X0 (k4_graph_1 \\
 & X1 X2))))))
 \end{aligned}$$

(1)

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\
 & (l1_graph_1 X0))) \wedge (m1_subset_1 X1 (u4_struct_0 X0))) \Rightarrow (k4_graph_1 \\
 & X0 X1 = k2_graph_1 X0 X1)
 \end{aligned}$$

(2)

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 \\ & X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 \\ & X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge(m1_subset_1 X1 (u1_struct_0 \\ & X0))\Rightarrow(\forall X3.(m2_cat_3 X3 X0 X1 X2)\Rightarrow((v1_funct_1 X3)\wedge((v1_funct_2 \\ & X3 X2 (u4_struct_0 X0))\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X2 (u4_struct_0 X0))))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(l1_cat_1 X0)\Rightarrow(l1_graph_1 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 \\ & X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 X0)\wedge(l1_cat_1 X0))))))))\wedge(((\\ & v1_funct_1 X2)\wedge((v1_funct_2 X2 X1 (u4_struct_0 X0))\wedge(m1_subset_1 \\ & X2 (k1_zfmisc_1 (k2_zfmisc_1 X1 (u4_struct_0 X0))))))\wedge(m1_subset_1 \\ & X3 (u4_struct_0 X0)))\Rightarrow((v1_funct_1 (k7_cat_3 X0 X1 X2 X3))\wedge((\\ & v1_funct_2 (k7_cat_3 X0 X1 X2 X3) X1 (u4_struct_0 X0))\wedge(m1_subset_1 \\ & (k7_cat_3 X0 X1 X2 X3) (k1_zfmisc_1 (k2_zfmisc_1 X1 (u4_struct_0 \\ & X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.(((l1_graph_1 X0)\wedge(m1_subset_1 X1 (u4_struct_0 X0)))\Rightarrow(m1_subset_1 (k2_graph_1 X0 X1) (u1_struct_0 X0))) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_cat_1 \\ & X0)\wedge((v3_cat_1 X0)\wedge((v4_cat_1 X0)\wedge((v5_cat_1 X0)\wedge((v6_cat_1 \\ & X0)\wedge(l1_cat_1 X0))))))))\Rightarrow(\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0))\Rightarrow(\forall X2.\forall X3.((v1_funct_1 X3)\wedge((v1_funct_2 X3 \\ & X2 (u4_struct_0 X0))\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X2 (u4_struct_0 X0))))))\Rightarrow((m2_cat_3 X3 X0 X1 X2)\Leftrightarrow(r2_funct_2 X2 \\ & (u1_struct_0 X0) (k3_cat_3 X0 X2 X3) (k8_funcop_1 (u1_struct_0 \\ & X0) X2 X1)))))) \end{aligned} \quad (7)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2_struct_0 X1)\wedge((\neg v11_struct_0 X1)\wedge \\ & ((v2_cat_1 X1)\wedge((v3_cat_1 X1)\wedge((v4_cat_1 X1)\wedge((v5_cat_1 X1)\wedge \\ & ((v6_cat_1 X1)\wedge(l1_cat_1 X1))))))))\Rightarrow(\forall X2.(m1_subset_1 \\ & X2 (u1_struct_0 X1))\Rightarrow(\forall X3.(m1_subset_1 X3 (u4_struct_0 \\ & X1))\Rightarrow(\forall X4.(m2_cat_3 X4 X1 X2 X0)\Rightarrow(((k3_graph_1 X1 X3 = X2)\Rightarrow \\ & (m2_cat_3 (k7_cat_3 X1 X0 X4 X3) X1 (k4_graph_1 X1 X3) X0)))))) \end{aligned}$$