

t46_oppcat_1 (TM-
NXmi9sPQQkbsWtDDQgBqk2KEUGhoe3GBV)

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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 $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_oppcat_1 : \iota \Rightarrow \iota$ be given. Let $k11_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
 & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
 & X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
 & \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
 & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
 & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\
 & X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
 & X0) (u4_struct_0 X1)))))) \Rightarrow (\forall X3.(m1_subset_1 X3 (u4_struct_0 \\
 & X0)) \Rightarrow (k3_funct_2 (u4_struct_0 (k2_oppcat_1 X0)) (u4_struct_0 \\
 & X1) (k10_oppcat_1 X0 X1 X2) (k5_oppcat_1 X0 X3) = k3_funct_2 (u4_struct_0 \\
 & X0) (u4_struct_0 X1) X2 X3)))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\
& X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
& X0) (u4_struct_0 X1)))))) \Rightarrow (\forall X3.(m1_subset_1 X3 (u4_struct_0 \\
& (k2_oppcat_1 X0))) \Rightarrow (k3_funct_2 (u4_struct_0 (k2_oppcat_1 X0)) \\
& (u4_struct_0 (k2_oppcat_1 X1)) (k11_oppcat_1 (k2_oppcat_1 X0) \\
& X1 (k10_oppcat_1 X0 X1 X2)) X3 = k5_oppcat_1 X1 (k3_funct_2 (u4_struct_0 \\
& X0) (u4_struct_0 X1) X2 (k6_oppcat_1 X0 X3))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge \\
& ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge \\
& ((v6_cat_1 X0) \wedge (l1_cat_1 X0))))))) \wedge (m1_subset_1 X1 (u4_struct_0 \\
& X0))) \Rightarrow (m1_subset_1 (k5_oppcat_1 X0 X1) (u4_struct_0 (k2_oppcat_1 \\
& X0)))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\
& X0) \wedge ((v2_cat_1 X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 \\
& X0) \wedge ((v6_cat_1 X0) \wedge (l1_cat_1 X0))))))) \wedge (((\neg v2_struct_0 X1) \wedge \\
& ((\neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \wedge ((v1_funct_1 \\
& X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 X1)) \wedge (m1_subset_1 \\
& X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 X0) (u4_struct_0 X1)))))) \Rightarrow \\
& ((v1_funct_1 (k10_oppcat_1 X0 X1 X2)) \wedge ((v1_funct_2 (k10_oppcat_1 \\
& X0 X1 X2) (u4_struct_0 (k2_oppcat_1 X0)) (u4_struct_0 X1)) \wedge (m1_subset_1 \\
& (k10_oppcat_1 X0 X1 X2) (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
& (k2_oppcat_1 X0)) (u4_struct_0 X1))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u4_struct_0 \\
& X0)) \Rightarrow (k5_oppcat_1 X0 X1 = X1))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\
& X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
& X0) (u4_struct_0 X1)))))) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (u4_struct_0 (k2_oppcat_1 X0) (u4_struct_0 X1)) \wedge (m1_subset_1 \\
& X3 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 (k2_oppcat_1 X0)) (\\
& u4_struct_0 X1)))))) \Rightarrow ((X3 = k10_oppcat_1 X0 X1 X2) \Leftrightarrow (\forall X4. \\
& (m1_subset_1 X4 (u4_struct_0 (k2_oppcat_1 X0)) \Rightarrow (k3_funct_2 \\
& (u4_struct_0 (k2_oppcat_1 X0) (u4_struct_0 X1) X3 X4 = k3_funct_2 \\
& (u4_struct_0 X0) (u4_struct_0 X1) X2 (k6_oppcat_1 X0 X4))))))
\end{aligned} \tag{6}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\
& ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u4_struct_0 X0) (u4_struct_0 \\
& X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u4_struct_0 \\
& X0) (u4_struct_0 X1)))))) \Rightarrow (\forall X3.(m1_subset_1 X3 (u4_struct_0 \\
& X0)) \Rightarrow (k3_funct_2 (u4_struct_0 (k2_oppcat_1 X0) (u4_struct_0 \\
& (k2_oppcat_1 X1)) (k11_oppcat_1 (k2_oppcat_1 X0) X1 (k10_oppcat_1 \\
& X0 X1 X2)) (k5_oppcat_1 X0 X3) = k5_oppcat_1 X1 (k3_funct_2 (u4_struct_0 \\
& X0) (u4_struct_0 X1) X2 X3))))
\end{aligned}$$