

l42_oppcat_1 (TMQfak- wcbAKF2HTEQshYiHYF4NW4bE7xPaB)

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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 $k2_oppcat_1 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k9_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_oppcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 (k2_oppcat_1 X0) X1) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (u1_struct_0 X0) \Rightarrow (k3_funct_2 (u1_struct_0 X0) (u1_struct_0 \\
& X1) (k7_cat_1 X0 X1 (k9_oppcat_1 X0 X1 X2)) X3 = k3_funct_2 (u1_struct_0 \\
& (k2_oppcat_1 X0)) (u1_struct_0 X1) (k7_cat_1 (k2_oppcat_1 X0) \\
& X1 X2) (k3_oppcat_1 X0 X3))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\
& X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\
& X0) \wedge (l1_cat_1 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\
& \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\
& X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1)))))) \Rightarrow (\forall X2. \\
& (m2_cat_1 X2 (k2_oppcat_1 X0) X1) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& (u1_struct_0 X0) \Rightarrow (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\
& X1) (k9_oppcat_1 X0 X1 X2) (k4_cat_1 X0 X3) = k4_cat_1 X1 (k3_funct_2 \\
& (u1_struct_0 (k2_oppcat_1 X0)) (u1_struct_0 X1) (k7_cat_1 (k2_oppcat_1 \\
& X0) X1 X2) (k3_oppcat_1 X0 X3))))))
\end{aligned} \tag{2}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_cat_1 \\ & X0) \wedge ((v3_cat_1 X0) \wedge ((v4_cat_1 X0) \wedge ((v5_cat_1 X0) \wedge ((v6_cat_1 \\ & X0) \wedge (l1_cat_1 X0))))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\\ & \neg v11_struct_0 X1) \wedge ((v2_cat_1 X1) \wedge ((v3_cat_1 X1) \wedge ((v4_cat_1 \\ & X1) \wedge ((v5_cat_1 X1) \wedge ((v6_cat_1 X1) \wedge (l1_cat_1 X1))))))) \Rightarrow (\forall X2. \\ & (m2_cat_1 X2 (k2_oppcat_1 X0) X1) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ & (u1_struct_0 X0) \Rightarrow (k3_funct_2 (u4_struct_0 X0) (u4_struct_0 \\ & X1) (k9_oppcat_1 X0 X1 X2) (k4_cat_1 X0 X3) = k4_cat_1 X1 (k3_funct_2 \\ & (u1_struct_0 X0) (u1_struct_0 X1) (k7_cat_1 X0 X1 (k9_oppcat_1 \\ & X0 X1 X2) X3)))))) \end{aligned}$$