

## t29\_oppcat\_1

(TMdRJ7HL7fepMEy9fqfWjpABV7dPRPt5y8x)

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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  $k7\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_oppcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_oppcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_oppcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & (k2\_oppcat\_1 X0))) \Rightarrow (k3\_oppcat\_1 X0 (k4\_oppcat\_1 X0 X1) = X1)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\ & \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\ & X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\ & (m2\_cat\_1 X2 (k2\_oppcat\_1 X0) X1) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0) \Rightarrow (k3\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X1) (k7\_cat\_1 X0 X1 (k9\_oppcat\_1 X0 X1 X2)) X3 = k3\_funct\_2 (u1\_struct\_0 \\ & (k2\_oppcat\_1 X0) (u1\_struct\_0 X1) (k7\_cat\_1 (k2\_oppcat\_1 X0) \\ & X1 X2) (k3\_oppcat\_1 X0 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1.(((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge \\ & ((v2\_cat\_1 X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge \\ & ((v6\_cat\_1 X0) \wedge (l1\_cat\_1 X0))))))) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 \\ & (k2\_oppcat\_1 X0))) \Rightarrow (m1\_subset\_1 (k4\_oppcat\_1 X0 X1) (u1\_struct\_0 \\ & X0)) \end{aligned} \quad (3)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge (l1\_cat\_1 X0))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (( \\ & \neg v11\_struct\_0 X1) \wedge ((v2\_cat\_1 X1) \wedge ((v3\_cat\_1 X1) \wedge ((v4\_cat\_1 \\ & X1) \wedge ((v5\_cat\_1 X1) \wedge ((v6\_cat\_1 X1) \wedge (l1\_cat\_1 X1))))))) \Rightarrow (\forall X2. \\ & (m2\_cat\_1 X2 (k2\_oppcat\_1 X0) X1) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 (k2\_oppcat\_1 X0))) \Rightarrow (k3\_funct\_2 (u1\_struct\_0 X0) \\ & (u1\_struct\_0 X1) (k7\_cat\_1 X0 X1 (k9\_oppcat\_1 X0 X1 X2)) (k4\_oppcat\_1 \\ & X0 X3) = k3\_funct\_2 (u1\_struct\_0 (k2\_oppcat\_1 X0)) (u1\_struct\_0 \\ & X1) (k7\_cat\_1 (k2\_oppcat\_1 X0) X1 X2) X3)))) \end{aligned}$$