t12_oppcat_1 (TMTy79nawPVSxkSzQsr7rimN5EksNyQUMsB)

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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 $k2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_xboole\_0 : \iota$ be given. Let $m1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_oppcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k2\_oppcat\_1 : \iota \Rightarrow \iota$ be given. Let $k7\_oppcat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge (l1\_cat\_1\ X0))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_cat\_1\ X3\ X0\ X1\ X2) \Rightarrow ((k2\_cat\_1\ X0\ X1\ X2 \neq k1\_xboole\_0) \Rightarrow ((k3\_graph\_1\ X0\ X3 = X1) \wedge (k4\_graph\_1\ X0\ X3 = X2)))))) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow ((k2\_cat\_1\ X0\ X1\ X2 \neq k1\_xboole\_0) \Rightarrow (\forall X3.(m1\_cat\_1\ X3\ X0\ X1\ X2) \Rightarrow ((k3\_graph\_1\ (k2\_oppcat\_1\ X0)\ (k7\_oppcat\_1\ X0\ X1\ X2\ X3) = k4\_graph\_1\ X0\ X3) \wedge (k4\_graph\_1\ (k2\_oppcat\_1\ X0)\ (k7\_oppcat\_1\ X0\ X1\ X2\ X3) = k3\_graph\_1\ X0\ X3)))))) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (k3\_oppcat\_1\ X0\ X1 = X1)) \tag{3}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow((k2\_cat\_1\ X0\ X1\ X2\neq k1\_xboole\_0)\Rightarrow(\forall X3.(m1\_cat\_1\ X3\ X0\ X1\ X2)\Rightarrow((k3\_oppcat\_1\ X0\ (k3\_graph\_1\ X0\ X3) = k4\_graph\_1\ (k2\_oppcat\_1\ X0)\ (k7\_oppcat\_1\ X0\ X1\ X2\ X3))\wedge(k3\_oppcat\_1\ X0\ (k4\_graph\_1\ X0\ X3) = k3\_graph\_1\ (k2\_oppcat\_1\ X0)\ (k7\_oppcat\_1\ X0\ X1\ X2\ X3)))))))$$