t86_cat_3 (TM-RkkpL3CVwaXJYZ8W3BdmCEhcyZmkgjj5w)

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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 $r4\_cat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v11\_cat\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4\_graph\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u4\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u4\_struct\_0\ X0)) \Rightarrow (((r4\_cat\_3\ X0\ X1\ X2\ X3) \wedge (v11\_cat\_1\ (k3\_graph\_1\ X0\ X3)\ X0)) \Rightarrow (r1\_cat\_1\ X0\ (k3\_graph\_1\ X0\ X2)\ X1)))))) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u4\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u4\_struct\_0\ X0)) \Rightarrow ((r4\_cat\_3\ X0\ X1\ X2\ X3) \Leftrightarrow ((k4\_graph\_1\ X0\ X2 = X1) \wedge ((k4\_graph\_1\ X0\ X3 = X1) \wedge (\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X5.(m1\_subset\_1\ X5\ (u4\_struct\_0\ X0)) \Rightarrow (\forall X6.(m1\_subset\_1\ X6\ (u4\_struct\_0\ X0)) \Rightarrow (\neg(X5 \in k2\_cat\_1\ X0\ (k3\_graph\_1\ X0\ X2)\ X4) \wedge ((X6 \in k2\_cat\_1\ X0\ (k3\_graph\_1\ X0\ X3)\ X4) \wedge (\forall X7.(m1\_subset\_1\ X7\ (u4\_struct\_0\ X0)) \Rightarrow (\neg(X7 \in k2\_cat\_1\ X0\ X1\ X4) \wedge (\forall X8.(m1\_subset\_1\ X8\ (u4\_struct\_0\ X0)) \Rightarrow ((X8 \in k2\_cat\_1\ X0\ X1\ X4) \Rightarrow (((k1\_cat\_1\ X0\ X2\ X8 = X5) \wedge (k1\_cat\_1\ X0\ X3\ X8 = X6)) \Leftrightarrow (X7 = X8)))))))))))))))) \tag{2}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u4\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u4\_struct\_0\ X0))\Rightarrow(((r4\_cat\_3\ X0\ X1\ X2\ X3)\wedge(v11\_cat\_1\ (k3\_graph\_1\ X0\ X2)\ X0))\Rightarrow(r1\_cat\_1\ X0\ (k3\_graph\_1\ X0\ X3)\ X1)))))$$