t23_isocat_1 (TMFPnm64Gy9Eqc2G328nuTbo8BHP89b5z14)

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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 $r2\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k4\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_isocat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_cat\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_nattra\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2\_isocat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k5\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0\ X1) \wedge ((\neg v11\_struct\_0\ X1) \wedge ((v2\_cat\_1\ X1) \wedge ((v3\_cat\_1\ X1) \wedge ((v4\_cat\_1\ X1) \wedge ((v5\_cat\_1\ X1) \wedge ((v6\_cat\_1\ X1) \wedge (l1\_cat\_1\ X1)))))))) \Rightarrow (\forall X2.((\neg v2\_struct\_0\ X2) \wedge ((\neg v11\_struct\_0\ X2) \wedge ((v2\_cat\_1\ X2) \wedge ((v3\_cat\_1\ X2) \wedge ((v4\_cat\_1\ X2) \wedge ((v5\_cat\_1\ X2) \wedge ((v6\_cat\_1\ X2) \wedge (l1\_cat\_1\ X2)))))))) \Rightarrow (\forall X3.(m2\_cat\_1\ X3\ X0\ X1) \Rightarrow (\forall X4.(m2\_cat\_1\ X4\ X0\ X1) \Rightarrow ((r1\_nattra\_1\ X0\ X1\ X3\ X4) \Rightarrow (\forall X5.(m1\_nattra\_1\ X5\ X0\ X1\ X3\ X4) \Rightarrow (\forall X6.(m2\_cat\_1\ X6\ X1\ X2) \Rightarrow (\forall X7.(m1\_subset\_1\ X7\ (u1\_struct\_0\ X0)) \Rightarrow (k4\_nattra\_1\ X0\ X2\ (k9\_cat\_1\ X0\ X1\ X2\ X3\ X6)\ (k9\_cat\_1\ X0\ X1\ X2\ X4\ X6)\ (k2\_isocat\_1\ X0\ X1\ X2\ X3\ X4\ X5\ X6)\ X7 = k9\_cat\_3\ X1\ (k8\_cat\_1\ X0\ X1\ X3\ X7)\ (k8\_cat\_1\ X0\ X1\ X4\ X7)\ X2\ X6\ (k4\_nattra\_1\ X0\ X1\ X3\ X4\ X5\ X7)))))))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0)))))))))\wedge(((\neg v2\_struct\_0\ X1)\wedge((\neg v11\_struct\_0\ X1)\wedge((v2\_cat\_1\ X1)\wedge((v3\_cat\_1\ X1)\wedge((v4\_cat\_1\ X1)\wedge((v5\_cat\_1\ X1)\wedge((v6\_cat\_1\ X1)\wedge(l1\_cat\_1\ X1)))))))))\wedge((m2\_cat\_1\ X2\ X0\ X1)\wedge(m2\_cat\_1\ X3\ X0\ X1))))\Rightarrow(\forall X4.(m2\_nattra\_1\ X4\ X0\ X1\ X2\ X3)\Rightarrow(m1\_nattra\_1\ X4\ X0\ X1\ X2\ X3)) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0)))))))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((\neg v11\_struct\_0\ X1)\wedge((v2\_cat\_1\ X1)\wedge((v3\_cat\_1\ X1)\wedge((v4\_cat\_1\ X1)\wedge((v5\_cat\_1\ X1)\wedge((v6\_cat\_1\ X1)\wedge(l1\_cat\_1\ X1)))))))))\Rightarrow(\forall X2.(m2\_cat\_1\ X2\ X0\ X1)\Rightarrow(\forall X3.(m2\_cat\_1\ X3\ X0\ X1)\Rightarrow((r2\_nattra\_1\ X0\ X1\ X2\ X3)\Leftrightarrow((r1\_nattra\_1\ X0\ X1\ X2\ X3)\wedge(\exists X4.(m1\_nattra\_1\ X4\ X0\ X1\ X2\ X3)\wedge(\forall X5.(m1\_subset\_1\ X5\ (u1\_struct\_0\ X0))\Rightarrow(\forall X6.(m1\_subset\_1\ X6\ (u1\_struct\_0\ X0))\Rightarrow((k2\_cat\_1\ X0\ X5\ X6\neq k1\_xboole\_0)\Rightarrow(\forall X7.(m1\_cat\_1\ X7\ X0\ X5\ X6)\Rightarrow(k5\_cat\_1\ X1\ (k8\_cat\_1\ X0\ X1\ X2\ X5)\ (k8\_cat\_1\ X0\ X1\ X2\ X6)\ (k8\_cat\_1\ X0\ X1\ X3\ X6)\ (k9\_cat\_3\ X0\ X5\ X6\ X1\ X2\ X7)\ (k4\_nattra\_1\ X0\ X1\ X2\ X3\ X4\ X6) = k5\_cat\_1\ X1\ (k8\_cat\_1\ X0\ X1\ X2\ X5)\ (k8\_cat\_1\ X0\ X1\ X3\ X5)\ (k8\_cat\_1\ X0\ X1\ X3\ X6)\ (k4\_nattra\_1\ X0\ X1\ X2\ X3\ X4\ X5)\ (k9\_cat\_3\ X0\ X5\ X6\ X1\ X3\ X7)))))))))))) \tag{3}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0)))))))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((\neg v11\_struct\_0\ X1)\wedge((v2\_cat\_1\ X1)\wedge((v3\_cat\_1\ X1)\wedge((v4\_cat\_1\ X1)\wedge((v5\_cat\_1\ X1)\wedge((v6\_cat\_1\ X1)\wedge(l1\_cat\_1\ X1)))))))))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge((\neg v11\_struct\_0\ X2)\wedge((v2\_cat\_1\ X2)\wedge((v3\_cat\_1\ X2)\wedge((v4\_cat\_1\ X2)\wedge((v5\_cat\_1\ X2)\wedge((v6\_cat\_1\ X2)\wedge(l1\_cat\_1\ X2)))))))))\Rightarrow(\forall X3.(m2\_cat\_1\ X3\ X0\ X1)\Rightarrow(\forall X4.(m2\_cat\_1\ X4\ X0\ X1)\Rightarrow((r2\_nattra\_1\ X0\ X1\ X3\ X4)\Rightarrow(\forall X5.(m2\_nattra\_1\ X5\ X0\ X1\ X3\ X4)\Rightarrow(\forall X6.(m2\_cat\_1\ X6\ X1\ X2)\Rightarrow(k4\_isocat\_1\ X0\ X1\ X2\ X3\ X4\ X5\ X6 = k2\_isocat\_1\ X0\ X1\ X2\ X3\ X4\ X5\ X6)))))))) \tag{4}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge((\neg v11\_struct\_0\ X1)\wedge((v2\_cat\_1\ X1)\wedge((v3\_cat\_1\ X1)\wedge((v4\_cat\_1\ X1)\wedge((v5\_cat\_1\ X1)\wedge((v6\_cat\_1\ X1)\wedge(l1\_cat\_1\ X1))))))))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge((\neg v11\_struct\_0\ X2)\wedge((v2\_cat\_1\ X2)\wedge((v3\_cat\_1\ X2)\wedge((v4\_cat\_1\ X2)\wedge((v5\_cat\_1\ X2)\wedge((v6\_cat\_1\ X2)\wedge(l1\_cat\_1\ X2))))))))\Rightarrow(\forall X3.(m2\_cat\_1\ X3\ X0\ X1)\Rightarrow(\forall X4.(m2\_cat\_1\ X4\ X0\ X1)\Rightarrow((r2\_nattra\_1\ X0\ X1\ X3\ X4)\Rightarrow(\forall X5.(m2\_nattra\_1\ X5\ X0\ X1\ X3\ X4)\Rightarrow(\forall X6.(m2\_cat\_1\ X6\ X1\ X2)\Rightarrow(\forall X7.(m1\_subset\_1\ X7\ (u1\_struct\_0\ X0))\Rightarrow(k4\_nattra\_1\ X0\ X2\ (k9\_cat\_1\ X0\ X1\ X2\ X3\ X6)\ (k9\_cat\_1\ X0\ X1\ X2\ X4\ X6)\ (k4\_isocat\_1\ X0\ X1\ X2\ X3\ X4\ X5\ X6)\ X7 = k9\_cat\_3\ X1\ (k8\_cat\_1\ X0\ X1\ X3\ X7)\ (k8\_cat\_1\ X0\ X1\ X4\ X7)\ X2\ X6\ (k4\_nattra\_1\ X0\ X1\ X3\ X4\ X5\ X7)))))))))))$$