t33_cat_1 (TMchHb8T2Rxfa6jb9xhNhAe5uuUJhox3xMD)

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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 $m1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v7\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_xboole\_0 : \iota$ be given. Let $k1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X5.(m1\_cat\_1\ X5\ X0\ X1\ X2) \Rightarrow (\forall X6.(m1\_cat\_1\ X6\ X0\ X2\ X3) \Rightarrow (\forall X7.(m1\_cat\_1\ X7\ X0\ X3\ X4) \Rightarrow (\neg (k2\_cat\_1\ X0\ X1\ X2 \neq k1\_xboole\_0) \wedge ((k2\_cat\_1\ X0\ X2\ X3 \neq k1\_xboole\_0) \wedge ((k2\_cat\_1\ X0\ X3\ X4 \neq k1\_xboole\_0) \wedge (k5\_cat\_1\ X0\ X1\ X2\ X4\ X5\ (k5\_cat\_1\ X0\ X2\ X3\ X4\ X6\ X7) \neq k5\_cat\_1\ X0\ X1\ X3\ X4\ (k5\_cat\_1\ X0\ X1\ X2\ X3\ X5\ X6)\ X7)))))))))))) \tag{1}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5.(((\neg v2\_struct\_0\ X0) \wedge ((\neg v11\_struct\_0\ X0) \wedge ((v2\_cat\_1\ X0) \wedge ((v3\_cat\_1\ X0) \wedge ((v4\_cat\_1\ X0) \wedge ((v5\_cat\_1\ X0) \wedge ((v6\_cat\_1\ X0) \wedge (l1\_cat\_1\ X0)))))))) \wedge ((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \wedge ((m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \wedge ((m1\_subset\_1\ X3\ (u1\_struct\_0\ X0)) \wedge ((m1\_cat\_1\ X4\ X0\ X1\ X2) \wedge (m1\_cat\_1\ X5\ X0\ X2\ X3)))))) \Rightarrow (m1\_cat\_1\ (k5\_cat\_1\ X0\ X1\ X2\ X3\ X4\ X5)\ X0\ X1\ X3) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_cat\_1\ X3\ X0\ X1\ X2)\Rightarrow((v7\_cat\_1\ X3\ X0\ X1\ X2)\Leftrightarrow((k2\_cat\_1\ X0\ X1\ X2\neq k1\_xboole\_0)\wedge(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X0))\Rightarrow((k2\_cat\_1\ X0\ X4\ X1\neq k1\_xboole\_0)\Rightarrow(\forall X5.(m1\_cat\_1\ X5\ X0\ X4\ X1)\Rightarrow(\forall X6.(m1\_cat\_1\ X6\ X0\ X4\ X1)\Rightarrow((k5\_cat\_1\ X0\ X4\ X1\ X2\ X5\ X3 = k5\_cat\_1\ X0\ X4\ X1\ X2\ X6\ X3)\Rightarrow(X5 = X6)))))))))) \tag{3}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4.(m1\_cat\_1\ X4\ X0\ X1\ X2)\Rightarrow(\forall X5.(m1\_cat\_1\ X5\ X0\ X2\ X3)\Rightarrow(\neg(k2\_cat\_1\ X0\ X1\ X2\neq k1\_xboole\_0)\wedge((k2\_cat\_1\ X0\ X2\ X3\neq k1\_xboole\_0)\wedge(k5\_cat\_1\ X0\ X1\ X2\ X3\ X4\ X5\neq k1\_cat\_1\ X0\ X4\ X5)))))))) \tag{4}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((\neg v11\_struct\_0\ X0)\wedge((v2\_cat\_1\ X0)\wedge((v3\_cat\_1\ X0)\wedge((v4\_cat\_1\ X0)\wedge((v5\_cat\_1\ X0)\wedge((v6\_cat\_1\ X0)\wedge(l1\_cat\_1\ X0))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4.(m1\_cat\_1\ X4\ X0\ X1\ X2)\Rightarrow(\forall X5.(m1\_cat\_1\ X5\ X0\ X2\ X3)\Rightarrow((v7\_cat\_1\ (k5\_cat\_1\ X0\ X1\ X2\ X3\ X4\ X5)\ X0\ X1\ X3)\Rightarrow((k2\_cat\_1\ X0\ X1\ X2 = k1\_xboole\_0)\vee((k2\_cat\_1\ X0\ X2\ X3 = k1\_xboole\_0)\vee(v7\_cat\_1\ X4\ X0\ X1\ X2)))))))))$$