

## t12\_cat\_4

(TMb7McoWbJdaA5pMhzEsQamiSLrbJK3GyN3)

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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  $v3\_cat\_4 : \iota \Rightarrow o$  be given. Let  $l1\_cat\_4 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_cat\_4 : \iota \Rightarrow \iota$  be given. Let  $v10\_cat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_cat\_1 : \iota \Rightarrow o$  be given. Let  $k2\_cat\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 X0) \wedge ((v3\_cat\_4 X0) \wedge (l1\_cat\_4 X0)))))))))) \Rightarrow (v10\_cat\_1 (k1\_cat\_4 X0) X0) \quad (1)$$

Assume the following.

$$\forall X0.(l1\_cat\_4 X0) \Rightarrow (l1\_cat\_1 X0) \quad (2)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_cat\_4 X0))) \Rightarrow (m1\_subset\_1 (k1\_cat\_4 X0) (u1\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 X0) \wedge (l1\_cat\_1 X0)))))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow ((v10\_cat\_1 X1 X0) \Leftrightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow ((k2\_cat\_1 X0 X2 X1 \neq k1\_xboole\_0) \wedge (\exists X3.(m1\_cat\_1 X3 X0 X2 X1) \wedge (\forall X4.(m1\_cat\_1 X4 X0 X2 X1) \Rightarrow (X3 = X4))))))) \quad (4)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_cat\_1 \\ & X0) \wedge ((v3\_cat\_1 X0) \wedge ((v4\_cat\_1 X0) \wedge ((v5\_cat\_1 X0) \wedge ((v6\_cat\_1 \\ & X0) \wedge ((v3\_cat\_4 X0) \wedge (l1\_cat\_4 X0)))))))))) \Rightarrow (\forall X1.(m1\_subset\_1 \\ X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_cat\_1 X2 X0 X1 (k1\_cat\_4 X0)) \Rightarrow \\ & (\forall X3.(m1\_cat\_1 X3 X0 X1 (k1\_cat\_4 X0)) \Rightarrow (X2 = X3)))) \end{aligned}$$