

t24\_substut2 (TM-  
bzc3KeuqYt5L5iRtLrbQymaUMKhm9niMM)

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Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_substut1 : \iota \Rightarrow \iota$  be given. Let  $k7\_cqc\_sim1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_cqc\_lang : \iota \Rightarrow \iota$  be given. Let  $k39\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k16\_substut1 : \iota \Rightarrow \iota$  be given. Let  $k38\_substut1 : \iota \Rightarrow \iota$  be given. Let  $v2\_substut1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_cqc\_lang : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m2\_subset\_1 X1 (k16\_substut1 X0) (k38\_substut1 X0)) \Rightarrow ((v2\_substut1 X1 X0) \Rightarrow (k39\_substut1 X0 X1 = k5\_cqc\_lang X0))) \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 X1 (k3\_cqc\_lang X0)) \wedge (m1\_subset\_1 X2 (k1\_substut1 X0)))) \Rightarrow (k2\_substut2 X0 X1 X2 = k4\_tarski X1 X2) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge ((m1\_subset\_1 X2 X0) \wedge (m1\_subset\_1 X3 X1)))) \Rightarrow (k1\_domain\_1 X0 X1 X2 X3 = k4\_tarski X2 X3) \quad (4)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k38\_substut1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k3\_cqc\_lang X0)) \quad (6)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k1\_subst1 X0)) \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ X2 X0 X1) \Rightarrow (m1\_subset\_1 X2 X0)) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (m2\_subset\_1 (k5\_cqc\_lang X0) (k9\_qc\_lang1 X0) (k3\_cqc\_lang X0)) \quad (9)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (m1\_subset\_1 (k3\_cqc\_lang X0) (k1\_zfmisc\_1 (k9\_qc\_lang1 X0))) \quad (10)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (m1\_subset\_1 (k38\_subst1 X0) (k1\_zfmisc\_1 (k16\_subst1 X0))) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1 X0) \wedge ((m1\_subset\_1 \\ X1 (k3\_cqc\_lang X0)) \wedge (m1\_subset\_1 X2 (k1\_subst1 X0)))) \Rightarrow (m2\_subset\_1 \\ (k2\_subst2 X0 X1 X2) (k16\_subst1 X0) (k38\_subst1 X0)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k16\_subst1 \\ X0)) \Rightarrow ((v2\_subst1 X1 X0) \Leftrightarrow (\exists X2.(m1\_subset\_1 X2 (k1\_subst1 \\ X0)) \wedge (X1 = k1\_domain\_1 (k3\_cqc\_lang X0) (k1\_subst1 X0) (k5\_cqc\_lang \\ X0) X2)))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (14)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_subst1 \\ X0)) \Rightarrow (k7\_cqc\_sim1 X0 (k5\_cqc\_lang X0) = k7\_cqc\_sim1 X0 (k39\_subst1 \\ X0 (k2\_subst2 X0 (k5\_cqc\_lang X0) X1)))) \end{aligned}$$