

## t9\_sublemma

(TMcbtY5trkhrSpAFvJxe2YDTJ5NoYfTsfY2)

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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  $k5\_numbers : \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k8\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k1\_subst1 : \iota \Rightarrow \iota$  be given. Let  $k10\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k3\_cqc\_lang : \iota \Rightarrow \iota$  be given. Let  $k39\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k38\_subst1 : \iota \Rightarrow \iota$  be given. Let  $k16\_subst1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 k5\_numbers) \Rightarrow \\
 & (\forall X2.(m2\_subset\_1 X2 (k6\_qc\_lang1 X0) (k8\_qc\_lang1 X0 X1)) \Rightarrow \\
 & (\forall X3.((v5\_relat\_1 X3 (k3\_qc\_lang1 X0)) \wedge ((v3\_card\_1 X3 \\
 & X1) \wedge (m2\_finseq\_1 X3 (k2\_qc\_lang1 X0)))) \Rightarrow (\forall X4.(m1\_subset\_1 \\
 & X4 (k1\_subst1 X0) \Rightarrow (k39\_subst1 X0 (k4\_sublemma X1 X0 X2 X3 X4) = \\
 & k10\_qc\_lang1 X0 X2 (k3\_subst1 X0 X3 X4))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\
 & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\
 & X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1))
 \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \tag{3}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\neg v1\_xboole\_0 (k38\_subst1 X0)) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k5\_numbers)\wedge(m1\_qc\_lang1 X1))\Rightarrow(\neg v1\_xboole\_0 (k8\_qc\_lang1 X1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1 X0)\wedge(m1\_subset\_1 X1 k5\_numbers))\Rightarrow(m1\_subset\_1 (k8\_qc\_lang1 X0 X1) (k1\_zfmisc\_1 (k6\_qc\_lang1 X0))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((m1\_subset\_1 X0 k5\_numbers)\wedge((m1\_qc\_lang1 X1)\wedge((m1\_subset\_1 X2 (k8\_qc\_lang1 X1 X0))\wedge((v5\_relat\_1 X3 (k3\_qc\_lang1 X1))\wedge((v3\_card\_1 X3 X0)\wedge(m1\_finseq\_1 X3 (k2\_qc\_lang1 X1))))\wedge(m1\_subset\_1 X4 (k1\_subst1 X1))))))\Rightarrow(m2\_subset\_1 (k4\_sublemma X0 X1 X2 X3 X4) (k16\_subst1 X1) (k38\_subst1 X1)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1 X0)\wedge(m1\_subset\_1 X1 (k38\_subst1 X0)))\Rightarrow(m2\_subset\_1 (k39\_subst1 X0 X1) (k9\_qc\_lang1 X0) (k3\_cqc\_lang X0)) \quad (8)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1 X0)\Rightarrow(m1\_subset\_1 (k38\_subst1 X0) (k1\_zfmisc\_1 (k16\_subst1 X0))) \quad (9)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))\Rightarrow(v1\_xboole\_0 X1)) \quad (10)$$

**Theorem 1**

$$\forall X0.(m1\_qc\_lang1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 k5\_numbers)\Rightarrow(\forall X2.(m2\_subset\_1 X2 (k6\_qc\_lang1 X0) (k8\_qc\_lang1 X0 X1))\Rightarrow(\forall X3.((v5\_relat\_1 X3 (k3\_qc\_lang1 X0))\wedge((v3\_card\_1 X3 X1)\wedge(m2\_finseq\_1 X3 (k2\_qc\_lang1 X0))))\Rightarrow(\forall X4.(m1\_subset\_1 X4 (k1\_subst1 X0))\Rightarrow(m2\_subset\_1 (k10\_qc\_lang1 X0 X2 (k3\_subst1 X0 X3 X4) (k9\_qc\_lang1 X0) (k3\_cqc\_lang X0)))))))$$