

## t26\_sublemma

(TMTseV5w9g4c2rMVRuKx2BxBRtxjh2AfTxe)

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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  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k16\_subst1 : \iota \Rightarrow \iota$  be given. Let  $k3\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $m1\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_subst1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k18\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k24\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_qc\_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k23\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k22\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k19\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_subst1 : \iota \Rightarrow \iota$  be given. Let  $k9\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Let  $k2\_qc\_lang1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (k1\_xtuple\_0 (k4\_tarski X0 X1) = X0) \wedge (k2\_xtuple\_0 (k4\_tarski X0 X1) = X1) \quad (1)$$

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.

$$\forall X0. \forall X1. ((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k2\_zfmisc\_1 (k16\_subst1 X0) (k3\_qc\_lang1 X0)))) \Rightarrow (k23\_subst1 X0 X1 = k2\_xtuple\_0 X1) \quad (3)$$

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.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k16\_subst1\ X0)))\Rightarrow(k19\_subst1\ X0\ X1 = k2\_xtuple\_0\ X1) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k16\_subst1\ X0)))\Rightarrow(k18\_subst1\ X0\ X1 = k1\_xtuple\_0\ X1) \quad (6)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k3\_qc\_lang1\ X0)) \quad (7)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k1\_subst1\ X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0))))\Rightarrow(\forall X2.(m1\_subst1\ X2\ X0\ X1)\Rightarrow(m1\_subset\_1\ X2\ (k1\_subst1\ X0))) \quad (9)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\neg v1\_xboole\_0\ (k9\_qc\_lang1\ X0)) \quad (10)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(m1\_subset\_1\ (k3\_qc\_lang1\ X0)\ (k1\_zfmisc\_1\ (k2\_qc\_lang1\ X0))) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0)\wedge((m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0)))\wedge(m1\_subst1\ X2\ X0\ X1)))\Rightarrow(m1\_subset\_1\ (k24\_subst1\ X0\ X1\ X2)\ (k16\_subst1\ X0)) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0))))\Rightarrow(m2\_subset\_1\ (k23\_subst1\ X0\ X1)\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1\ X0)) \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0))))\Rightarrow(m1\_subset\_1\ (k22\_subst1\ X0\ X1)\ (k16\_subst1\ X0)) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_qc\_lang1\ X0)\wedge(m1\_subset\_1\ X1\ (k16\_subst1\ X0)))\Rightarrow(m1\_subset\_1\ (k18\_subst1\ X0\ X1)\ (k9\_qc\_lang1\ X0)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0)\wedge((m1\_subset\_1\ X1\ (k3\_qc\_lang1\ X0))\wedge(m1\_subset\_1\ X2\ (k9\_qc\_lang1\ X0))))\Rightarrow(m1\_subset\_1\ (k15\_qc\_lang1\ X0\ X1\ X2)\ (k9\_qc\_lang1\ X0)) \quad (16)$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0)))\Rightarrow(\forall X2.(m1\_subset1\ X2\ X0\ X1)\Rightarrow((v3\_subst1\ X1\ X0)\Rightarrow(k24\_subst1\ X0\ X1\ X2 = k1\_domain\_1\ (k9\_qc\_lang1\ X0)\ (k1\_subst1\ X0)\ (k15\_qc\_lang1\ X0\ (k23\_subst1\ X0\ X1)\ (k18\_subst1\ X0\ (k22\_subst1\ X0\ X1))))\ X2)))) \quad (17)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ X0))\Rightarrow(v1\_xboole\_0\ X1)) \quad (18)$$

**Theorem 1**

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0)))\Rightarrow(\forall X2.(m1\_subset1\ X2\ X0\ X1)\Rightarrow((v3\_subst1\ X1\ X0)\Rightarrow((k18\_subst1\ X0\ (k24\_subst1\ X0\ X1\ X2) = k15\_qc\_lang1\ X0\ (k23\_subst1\ X0\ X1)\ (k18\_subst1\ X0\ (k22\_subst1\ X0\ X1))))\wedge(k19\_subst1\ X0\ (k24\_subst1\ X0\ X1\ X2) = X2))))))$$