

t29\_sublemma (TMK-  
BKw9EVMhuNPFRRREiVMHJQrxjUUtbEHzo)

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Let  $m1\_qc\_lang1 : \iota \Rightarrow o$  be given. Let  $v1\_sublemma : \iota \Rightarrow \iota \Rightarrow o$  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  $k10\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k31\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k24\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k22\_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_subst1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k38\_subst1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k2\_zfmisc\_1 \\ (k16\_subst1 X0) (k3\_qc\_lang1 X0))) \Rightarrow (\forall X2.(m1\_subst1 \\ X2 X0 X1) \Rightarrow ((v3\_subst1 X1 X0) \Rightarrow (k31\_subst1 X0 (k24\_subst1 \\ X0 X1 X2) = k22\_subst1 X0 X1)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_qc\_lang1 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k2\_zfmisc\_1 \\ (k16\_subst1 X0) (k3\_qc\_lang1 X0))) \Rightarrow (\forall X2.(m1\_subst1 \\ X2 X0 X1) \Rightarrow ((v3\_subst1 X1 X0) \Rightarrow (v7\_subst1 (k24\_subst1 X0 X1 \\ X2) X0)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge ((v1\_sublemma X1 X0) \wedge \\ (m1\_subset\_1 X1 (k2\_zfmisc\_1 (k16\_subst1 X0) (k3\_qc\_lang1 X0)))) \Rightarrow \\ (k8\_sublemma X0 X1 = k1\_xtuple\_0 X1) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((m1\_qc\_lang1 X0) \wedge (m1\_subset\_1 X1 (k2\_zfmisc\_1 \\ (k16\_subst1 X0) (k3\_qc\_lang1 X0)))) \Rightarrow (k22\_subst1 X0 X1 = k1\_xtuple\_0 \\ X1) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1\_qc\_lang1\ X0)\wedge(((v1\_sublemma \\ & X1\ X0)\wedge(m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1 \\ & X0))))\wedge(m1\_subst1\ X2\ X0\ X1)))\Rightarrow(m2\_subset\_1\ (k9\_sublemma\ X0 \\ & X1\ X2)\ (k16\_subst1\ X0)\ (k38\_subst1\ X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m2\_subset\_1\ X1\ (k16\_subst1 \\ & X0)\ (k38\_subst1\ X0))\Rightarrow((v7\_subst1\ X1\ X0)\Rightarrow(k10\_sublemma\ X0 \\ & X1 = k31\_subst1\ X0\ X1))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.((v1\_sublemma\ X1\ X0)\wedge \\ & (m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0))))\Rightarrow \\ & (\forall X2.(m1\_subst1\ X2\ X0\ X1)\Rightarrow((v3\_subst1\ X1\ X0)\Rightarrow(k9\_sublemma \\ & X0\ X1\ X2 = k24\_subst1\ X0\ X1\ X2)))) \end{aligned} \quad (7)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.((v1\_sublemma\ X1\ X0)\wedge \\ & (m1\_subset\_1\ X1\ (k2\_zfmisc\_1\ (k16\_subst1\ X0)\ (k3\_qc\_lang1\ X0))))\Rightarrow \\ & (\forall X2.(m1\_subst1\ X2\ X0\ X1)\Rightarrow((v3\_subst1\ X1\ X0)\Rightarrow(k10\_sublemma \\ & X0\ (k9\_sublemma\ X0\ X1\ X2) = k8\_sublemma\ X0\ X1)))) \end{aligned}$$