t40_sublemma (TMMEth3Ux9cfAnrGHdYo9cpjS4eWL7Av3K1)

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Let $m1\_qc\_lang1 : \iota \Rightarrow o$ be given. Let $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $k3\_qc\_lang1 : \iota \Rightarrow \iota$ be given. Let $k16\_substut1 : \iota \Rightarrow \iota$ be given. Let $k38\_substut1 : \iota \Rightarrow \iota$ be given. Let $m1\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3\_substut1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k35\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k32\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10\_xtuple\_0 : \iota \Rightarrow \iota$ be given. Let $k7\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11\_cqc\_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2\_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9\_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m2\_subset\_1\ X1\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1\ X0)) \Rightarrow (\forall X2.(m2\_subset\_1\ X2\ (k16\_substut1\ X0)\ (k38\_substut1\ X0)) \Rightarrow (\forall X3.(m1\_substut1\ X3\ X0\ (k7\_sublemma\ X0\ X2\ X1)) \Rightarrow (\neg(v3\_substut1\ (k7\_sublemma\ X0\ X2\ X1)\ X0) \wedge ((\neg X1 \in k10\_xtuple\_0\ (k7\_substut1\ X0\ X1\ (k11\_cqc\_lang\ X0\ X1\ (k2\_sublemma\ X0\ X2))\ X3)) \wedge (k35\_substut1\ X0\ (k32\_substut1\ X0\ (k9\_sublemma\ X0\ (k7\_sublemma\ X0\ X2\ X1)\ X3)) \in k10\_xtuple\_0\ (k7\_substut1\ X0\ X1\ (k11\_cqc\_lang\ X0\ X1\ (k2\_sublemma\ X0\ X2))\ X3)))))))) \tag{1}$$

Assume the following.

$$\forall X0.(m1\_qc\_lang1\ X0) \Rightarrow (\forall X1.(m2\_subset\_1\ X1\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1\ X0)) \Rightarrow (\forall X2.(m2\_subset\_1\ X2\ (k16\_substut1\ X0)\ (k38\_substut1\ X0)) \Rightarrow (\forall X3.(m1\_substut1\ X3\ X0\ (k7\_sublemma\ X0\ X2\ X1)) \Rightarrow (((v3\_substut1\ (k7\_sublemma\ X0\ X2\ X1)\ X0) \wedge (X1 \in k10\_xtuple\_0\ (k7\_substut1\ X0\ X1\ (k11\_cqc\_lang\ X0\ X1\ (k2\_sublemma\ X0\ X2))\ X3))) \Rightarrow ((\neg k35\_substut1\ X0\ (k32\_substut1\ X0\ (k9\_sublemma\ X0\ (k7\_sublemma\ X0\ X2\ X1)\ X3)) \in k10\_xtuple\_0\ (k7\_substut1\ X0\ X1\ (k11\_cqc\_lang\ X0\ X1\ (k2\_sublemma\ X0\ X2))\ X3)) \wedge (\neg k35\_substut1\ X0\ (k32\_substut1\ X0\ (k9\_sublemma\ X0\ (k7\_sublemma\ X0\ X2\ X1)\ X3)) \in k9\_substut1\ X0\ (k2\_sublemma\ X0\ X2))))))) \tag{2}$$

Theorem 1

$$\forall X0.(m1\_qc\_lang1\ X0)\Rightarrow(\forall X1.(m2\_subset\_1\ X1\ (k2\_qc\_lang1\ X0)\ (k3\_qc\_lang1\ X0))\Rightarrow(\forall X2.(m2\_subset\_1\ X2\ (k16\_substut1\ X0)\ (k38\_substut1\ X0))\Rightarrow(\forall X3.(m1\_substut1\ X3\ X0\ (k7\_sublemma\ X0\ X2\ X1))\Rightarrow(\neg(v3\_substut1\ (k7\_sublemma\ X0\ X2\ X1)\ X0)\wedge(k35\_substut1\ X0\ (k32\_substut1\ X0\ (k9\_sublemma\ X0\ (k7\_sublemma\ X0\ X2\ X1)\ X3))\in k10\_xtuple\_0\ (k7\_substut1\ X0\ X1\ (k11\_cqc\_lang\ X0\ X1\ (k2\_sublemma\ X0\ X2))\ X3))))))$$