

t6_sublemma

(TMctFehDUBq6drpgfpW1apjN7Gy1rgm1Kz3)

October 27, 2020

Let $m1_qc_lang1 : \iota \Rightarrow o$ be given. Let $m2_subset.1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k16_subst1 : \iota \Rightarrow \iota$ be given. Let $k38_subst1 : \iota \Rightarrow \iota$ be given. Let $v4_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k39_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k26_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k19_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole.0 : \iota \Rightarrow o$ be given. Let $m1_subset.1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc.1 : \iota \Rightarrow \iota$ be given. Let $k37_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xtuple.0 : \iota \Rightarrow \iota$ be given. Let $k18_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $v1_funct.1 : \iota \Rightarrow o$ be given. Let $v1_funct.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_zfmisc.1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_cqc_lang : \iota \Rightarrow \iota$ be given. Let $v5_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k13_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k27_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v6_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k14_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k28_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k29_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v7_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k36_subst1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k31_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. ((\neg v1_xboole.0 X0) \wedge ((\neg v1_xboole.0 X1) \wedge (m1_subset.1 X1 (k1_zfmisc.1 X0)))) \Rightarrow (\forall X2. (m2_subset.1 X2 X0 X1) \Leftrightarrow (m1_subset.1 X2 X1)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. ((m1_qc_lang1 X0) \wedge (m1_subset.1 X1 (k38_subst1 X0))) \Rightarrow (k39_subst1 X0 X1 = k37_subst1 X0 X1) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((m1_qc_lang1 X0) \wedge (m1_subset.1 X1 (k38_subst1 X0))) \Rightarrow (k2_sublemma X0 X1 = k1_xtuple.0 X1) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. ((m1_qc_lang1 X0) \wedge (m1_subset.1 X1 (k16_subst1 X0))) \Rightarrow (k18_subst1 X0 X1 = k1_xtuple.0 X1) \quad (4)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k38_subst1 X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2.(m2_subset_1 \\ X2 X0 X1) \Rightarrow (m1_subset_1 X2 X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m1_subset_1 (k38_subst1 X0) (k1_zfmisc_1 (k16_subst1 X0))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1 X0) \wedge (m1_subset_1 X1 (k16_subst1 X0))) \Rightarrow (m1_subset_1 (k37_subst1 X0 X1) (k9_qc_lang1 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k16_subst1 \\ X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (k9_qc_lang1 X0)) \Rightarrow ((X2 = k37_subst1 \\ X0 X1) \Leftrightarrow (\exists X3.((v1_funct_1 X3) \wedge ((v1_funct_2 X3 (k16_subst1 \\ X0) (k9_qc_lang1 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ (k16_subst1 X0) (k9_qc_lang1 X0)))))) \wedge ((X2 = k3_funct_2 (k16_subst1 \\ X0) (k9_qc_lang1 X0) X3 X1) \wedge (\forall X4.(m1_subset_1 X4 (k16_subst1 \\ X0)) \Rightarrow (((v2_subst1 X4 X0) \Rightarrow (k3_funct_2 (k16_subst1 X0) (k9_qc_lang1 \\ X0) X3 X4 = k5_cqc_lang X0)) \wedge (((v4_subst1 X4 X0) \Rightarrow (k3_funct_2 \\ (k16_subst1 X0) (k9_qc_lang1 X0) X3 X4 = k10_qc_lang1 X0 (k16_qc_lang1 \\ X0 (k18_subst1 X0 X4)) (k3_subst1 X0 (k26_subst1 X0 X4) (k19_subst1 \\ X0 X4)))) \wedge ((v5_subst1 X4 X0) \Rightarrow (k3_funct_2 (k16_subst1 X0) \\ (k9_qc_lang1 X0) X3 X4 = k13_qc_lang1 X0 (k3_funct_2 (k16_subst1 \\ X0) (k9_qc_lang1 X0) X3 (k27_subst1 X0 X4)))) \wedge ((v6_subst1 \\ X4 X0) \Rightarrow (k3_funct_2 (k16_subst1 X0) (k9_qc_lang1 X0) X3 X4 = k14_qc_lang1 \\ X0 (k3_funct_2 (k16_subst1 X0) (k9_qc_lang1 X0) X3 (k28_subst1 \\ X0 X4)) (k3_funct_2 (k16_subst1 X0) (k9_qc_lang1 X0) X3 (k29_subst1 \\ X0 X4)))) \wedge ((v7_subst1 X4 X0) \Rightarrow (k3_funct_2 (k16_subst1 X0) \\ (k9_qc_lang1 X0) X3 X4 = k36_subst1 X0 X4 (k3_funct_2 (k16_subst1 \\ X0) (k9_qc_lang1 X0) X3 (k31_subst1 X0 X4)))))))))) \end{aligned} \quad (9)$$

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

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m2_subset_1 X1 (k16_subst1 \\ X0) (k38_subst1 X0)) \Rightarrow ((v4_subst1 X1 X0) \Rightarrow (k39_subst1 X0 \\ X1 = k10_qc_lang1 X0 (k16_qc_lang1 X0 (k2_sublemma X0 X1)) (k3_subst1 \\ X0 (k26_subst1 X0 X1) (k19_subst1 X0 X1)))) \end{aligned}$$