

t13_substut2 (TMKE- bywP4CvhqjSqpdvdJPVfQ6Ev4TJRdoo)

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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 $k4_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_cqc_lang : \iota \Rightarrow \iota$ be given. Let $k16_substut1 : \iota \Rightarrow \iota$ be given. Let $k38_substut1 : \iota \Rightarrow \iota$ be given. Let $v2_substut1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k39_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k3_cqc_lang : \iota \Rightarrow \iota$ be given. Let $k1_substut1 : \iota \Rightarrow \iota$ be given. Let $k2_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k3_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m2_subset_1 X1 (k16_substut1 X0) (k38_substut1 X0)) \Rightarrow ((v2_substut1 X1 X0) \Rightarrow (k39_substut1 X0 X1 = k5_cqc_lang X0))) \quad (1)$$

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.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0) \wedge ((m1_subset_1 X1 (k3_cqc_lang X0)) \wedge (m1_subset_1 X2 (k1_substut1 X0)))) \Rightarrow (k2_substut2 X0 X1 X2 = k4_tarski X1 X2) \quad (3)$$

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.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k38_substut1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k3_qc_lang1 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k3_cqc_lang X0)) \quad (7)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k1_subst1 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2.(m2_subset_1 \\ X2 X0 X1) \Rightarrow (m1_subset_1 X2 X0)) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m2_subset_1 (k5_cqc_lang X0) (k9_qc_lang1 X0) (k3_cqc_lang X0)) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0) \wedge ((m1_subset_1 \\ X1 (k3_qc_lang1 X0)) \wedge (m1_subset_1 X2 (k3_qc_lang1 X0)))) \Rightarrow (m1_subset_1 \\ (k3_subst2 X0 X1 X2) (k1_subst1 X0)) \end{aligned} \quad (11)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m1_subset_1 (k3_qc_lang1 X0) (k1_zfmisc_1 (k2_qc_lang1 X0))) \quad (12)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m1_subset_1 (k3_cqc_lang X0) (k1_zfmisc_1 (k9_qc_lang1 X0))) \quad (13)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m1_subset_1 (k38_subst1 X0) (k1_zfmisc_1 (k16_subst1 X0))) \quad (14)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0) \wedge ((m1_subset_1 \\ X1 (k3_cqc_lang X0)) \wedge (m1_subset_1 X2 (k1_subst1 X0)))) \Rightarrow (m2_subset_1 \\ (k2_subst2 X0 X1 X2) (k16_subst1 X0) (k38_subst1 X0)) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(m2_subset_1\ X1\ (k9_qc_lang1 \\ X0)\ (k3_cqc_lang\ X0)) \Rightarrow (\forall X2.(m2_subset_1\ X2\ (k2_qc_lang1 \\ X0)\ (k3_qc_lang1\ X0)) \Rightarrow (\forall X3.(m2_subset_1\ X3\ (k2_qc_lang1 \\ X0)\ (k3_qc_lang1\ X0)) \Rightarrow (k4_substut2\ X0\ X1\ X2\ X3 = k39_substut1\ X0 \\ (k2_substut2\ X0\ X1\ (k3_substut2\ X0\ X2\ X3)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (k16_substut1 \\ X0)) \Rightarrow ((v2_substut1\ X1\ X0) \Leftrightarrow (\exists X2.(m1_subset_1\ X2\ (k1_substut1 \\ X0)) \wedge (X1 = k1_domain_1\ (k3_cqc_lang\ X0)\ (k1_substut1\ X0)\ (k5_cqc_lang \\ X0)\ X2)))) \end{aligned} \quad (17)$$

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

$$\begin{aligned} \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(m2_subset_1\ X1\ (k2_qc_lang1 \\ X0)\ (k3_qc_lang1\ X0)) \Rightarrow (\forall X2.(m2_subset_1\ X2\ (k2_qc_lang1 \\ X0)\ (k3_qc_lang1\ X0)) \Rightarrow (k4_substut2\ X0\ (k5_cqc_lang\ X0)\ X1\ X2 = k5_cqc_lang \\ X0))) \end{aligned}$$