

t21_substut2

(TMFrgveWya4Fn4XDv1DorDJdKEpLwy8cxnF)

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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 $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k3_cqc_lang : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_substut1 : \iota \Rightarrow \iota$ be given. Let $k7_cqc_sim1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k39_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_substut2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_cqc_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_substut1 : \iota \Rightarrow \iota$ be given. Let $k19_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k37_substut1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k21_substut1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_nat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k38_substut1 : \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xtuple_0 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k16_substut1 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (k16_substut1 X0)) \Rightarrow ((k19_substut1 \\ & X0 X1 = k19_substut1 X0 X2) \Rightarrow (k37_substut1 X0 (k21_substut1 X0 X1 \\ & X2) = k14_qc_lang1 X0 (k37_substut1 X0 X1) (k37_substut1 X0 X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m2_subset_1 X1 (k9_qc_lang1 \\ & X0) (k3_cqc_lang X0)) \Rightarrow (\forall X2.(m2_subset_1 X2 (k9_qc_lang1 \\ & X0) (k3_cqc_lang X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_substut1 \\ & X0)) \Rightarrow (k2_substut2 X0 (k7_cqc_lang X0 X1 X2) X3 = k6_sublemma X0 (\\ & k2_substut2 X0 X1 X3) (k2_substut2 X0 X2 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m2_subset_1 X1 (k9_qc_lang1 \\ & X0) (k3_cqc_lang X0)) \Rightarrow (\forall X2.(m2_subset_1 X2 (k9_qc_lang1 \\ & X0) (k3_cqc_lang X0)) \Rightarrow (k7_cqc_sim1 X0 (k7_cqc_lang X0 X1 X2) = k2_nat_1 \\ & (k7_cqc_sim1 X0 X1) (k7_cqc_sim1 X0 X2)))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0 X0)\wedge((\neg v1_xboole_0 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 X0))))\Rightarrow(\forall X2.(m2_subset_1 X2 X0 X1)\Leftrightarrow(m1_subset_1 X2 X1)) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0)\wedge((m1_subset_1 X1 (k3_cqc_lang X0))\wedge(m1_subset_1 X2 (k3_cqc_lang X0))))\Rightarrow(k7_cqc_lang X0 X1 X2 = k14_qc_lang1 X0 X1 X2) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1 X0)\wedge(m1_subset_1 X1 (k38_subst1 X0)))\Rightarrow(k39_subst1 X0 X1 = k37_subst1 X0 X1) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0)\wedge((m1_subset_1 X1 (k3_cqc_lang X0))\wedge(m1_subset_1 X2 (k1_subst1 X0))))\Rightarrow(k2_subst2 X0 X1 X2 = k4_tarski X1 X2) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1 X0)\wedge(m1_subset_1 X1 (k16_subst1 X0)))\Rightarrow(k19_subst1 X0 X1 = k2_xtuple_0 X1) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.k2_xtuple_0 (k4_tarski X0 X1) = X1 \quad (9)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k38_subst1 X0)) \quad (10)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k3_cqc_lang X0)) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0 X0)\wedge((\neg v1_xboole_0 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 X0))))\Rightarrow(\forall X2.(m2_subset_1 X2 X0 X1)\Rightarrow(m1_subset_1 X2 X0)) \quad (12)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k9_qc_lang1 X0)) \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1_qc_lang1\ X0)\wedge((m1_subset_1 \\ & X1\ (k38_subst1\ X0))\wedge(m1_subset_1\ X2\ (k38_subst1\ X0))))\Rightarrow(\\ & m2_subset_1\ (k6_sublemma\ X0\ X1\ X2)\ (k16_subst1\ X0)\ (k38_subst1 \\ & X0)) \end{aligned} \tag{14}$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(m1_subset_1\ (k3_cqc_lang\ X0)\ (k1_zfmisc_1\ (k9_qc_lang1\ X0))) \tag{15}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(m1_subset_1\ X1\ (k38_subst1 \\ & X0)))\Rightarrow(m2_subset_1\ (k39_subst1\ X0\ X1)\ (k9_qc_lang1\ X0)\ (k3_cqc_lang \\ & X0)) \end{aligned} \tag{16}$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(m1_subset_1\ (k38_subst1\ X0)\ (k1_zfmisc_1\ (k16_subst1\ X0))) \tag{17}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((m1_qc_lang1\ X0)\wedge((m1_subset_1 \\ & X1\ (k3_cqc_lang\ X0))\wedge(m1_subset_1\ X2\ (k1_subst1\ X0))))\Rightarrow(m2_subset_1 \\ & (k2_subst2\ X0\ X1\ X2)\ (k16_subst1\ X0)\ (k38_subst1\ X0)) \end{aligned} \tag{18}$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\neg v1_xboole_0\ (k16_subst1\ X0)) \tag{19}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m2_subset_1\ X1\ (k16_subst1 \\ & X0)\ (k38_subst1\ X0))\Rightarrow(\forall X2.(m2_subset_1\ X2\ (k16_subst1 \\ & X0)\ (k38_subst1\ X0))\Rightarrow((k19_subst1\ X0\ X1 = k19_subst1\ X0\ X2)\Rightarrow \\ & (k6_sublemma\ X0\ X1\ X2 = k21_subst1\ X0\ X1\ X2)))) \end{aligned} \tag{20}$$

Theorem 1

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m2_subset_1\ X1\ (k9_qc_lang1 \\ & X0)\ (k3_cqc_lang\ X0))\Rightarrow(\forall X2.(m2_subset_1\ X2\ (k9_qc_lang1 \\ & X0)\ (k3_cqc_lang\ X0))\Rightarrow(((\forall X3.(m1_subset_1\ X3\ (k1_subst1 \\ & X0))\Rightarrow(k7_cqc_sim1\ X0\ X1 = k7_cqc_sim1\ X0\ (k39_subst1\ X0\ (k2_subst2 \\ & X0\ X1\ X3))))\wedge(\forall X3.(m1_subset_1\ X3\ (k1_subst1\ X0))\Rightarrow(k7_cqc_sim1 \\ & X0\ X2 = k7_cqc_sim1\ X0\ (k39_subst1\ X0\ (k2_subst2\ X0\ X2\ X3))))))\Rightarrow \\ & (\forall X3.(m1_subset_1\ X3\ (k1_subst1\ X0))\Rightarrow(k7_cqc_sim1\ X0 \\ & (k7_cqc_lang\ X0\ X1\ X2) = k7_cqc_sim1\ X0\ (k39_subst1\ X0\ (k2_subst2 \\ & X0\ (k7_cqc_lang\ X0\ X1\ X2)\ X3)))))) \end{aligned}$$