

t4_sublemma (TMMMyitvfmn- tWWGn3xSSbr5c2VM9GpyMTo7N)

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Let $m1_qc_lang1 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $v2_subst1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k2_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k39_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k5_cqc_lang : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $m1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_cqc_lang : \iota \Rightarrow \iota$ be given. Let $k1_subst1 : \iota \Rightarrow \iota$ be given. Let $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. (k1_xtuple_0 (k4_tarski X0 X1) = X0) \wedge (k2_xtuple_0 (k4_tarski X0 X1) = X1) \quad (1)$$

Assume the following.

$$\forall X0. (m1_qc_lang1 X0) \Rightarrow (\forall X1. (m2_subset_1 X1 (k16_subst1 X0) (k38_subst1 X0)) \Rightarrow ((v2_subst1 X1 X0) \Rightarrow (k39_subst1 X0 X1 = k5_cqc_lang X0))) \quad (2)$$

Assume the following.

$$\forall X0. (m1_qc_lang1 X0) \Rightarrow (\forall X1. (\neg v1_xboole_0 X1) \Rightarrow (\forall X2. (m2_funct_2 X2 (k3_qc_lang1 X0) X1 (k2_valuat_1 X0 X1)) \Rightarrow (\forall X3. (m1_valuat_1 X3 X0 X1) \Rightarrow (r1_valuat_1 X0 X1 (k5_cqc_lang X0) X3 X2)))) \quad (3)$$

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.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X1)\wedge(m1_funct_2 X2 X0 X1))\Rightarrow(\forall X3.(m2_funct_2 X3 X0 X1 X2)\Leftrightarrow(m1_subset_1 X3 X2)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1 X0)\wedge(m1_subset_1 X1 (k38_subst1 X0)))\Rightarrow(k2_sublemma X0 X1 = k1_xtuple_0 X1) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0)\wedge((\neg v1_xboole_0 X1)\wedge((m1_subset_1 X2 X0)\wedge(m1_subset_1 X3 X1))))\Rightarrow(k1_domain_1 X0 X1 X2 X3 = k4_tarSKI X2 X3) \quad (7)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k38_subst1 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k3_cqc_lang X0)) \quad (9)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(\neg v1_xboole_0 (k1_subst1 X0)) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0 X0)\wedge((\neg v1_xboole_0 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 X0))))\Rightarrow(\forall X2.(m2_subset_1 X2 X0 X1)\Rightarrow(m1_subset_1 X2 X0)) \quad (11)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(m2_subset_1 (k5_cqc_lang X0) (k9_qc_lang1 X0) (k3_cqc_lang X0)) \quad (12)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1 X0)\wedge((m1_subset_1 X1 (k38_subst1 X0))\wedge((\neg v1_xboole_0 X2)\wedge(m1_subset_1 X3 (k2_valuat_1 X0 X2))))\Rightarrow((v1_funct_1 (k3_sublemma X0 X1 X2 X3))\wedge(m1_subset_1 (k3_sublemma X0 X1 X2 X3) (k1_zfmisc_1 (k2_zfmisc_1 (k3_qc_lang1 X0) X2)))) \quad (13)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(m1_subset_1\ (k3_cqc_lang\ X0)\ (k1_zfmisc_1\ (k9_qc_lang1\ X0))) \quad (14)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(m1_subset_1\ (k38_subst1\ X0)\ (k1_zfmisc_1\ (k16_subst1\ X0))) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(\neg v1_xboole_0\ X1))\Rightarrow(m1_funct_2\ (k2_valuat_1\ X0\ X1)\ (k3_qc_lang1\ X0)\ X1) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1\ X0)\wedge((\neg v1_xboole_0\ X1)\wedge((m1_subset_1\ X2\ (k2_valuat_1\ X0\ X1))\wedge((v1_funct_1\ X3)\wedge(m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k3_qc_lang1\ X0)\ X1))))))\Rightarrow(m2_funct_2\ (k1_sublemma\ X0\ X1\ X2\ X3)\ (k3_qc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1))) \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.k4_tarski\ X0\ X1 = k2_tarski\ (k2_tarski\ X0\ X1)\ (k1_tarski\ X0) \quad (18)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m2_subset_1\ X1\ (k16_subst1\ X0)\ (k38_subst1\ X0))\Rightarrow(\forall X2.(\neg v1_xboole_0\ X2)\Rightarrow(\forall X3.(m2_funct_2\ X3\ (k3_qc_lang1\ X0)\ X2\ (k2_valuat_1\ X0\ X2))\Rightarrow(\forall X4.(m1_valuat_1\ X4\ X0\ X2)\Rightarrow((r1_sublemma\ X0\ X1\ X2\ X3\ X4)\Leftrightarrow(r1_valuat_1\ X0\ X2\ (k2_sublemma\ X0\ X1)\ X4\ X3)))))) \quad (19)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k16_subst1\ X0))\Rightarrow((v2_subst1\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k1_subst1\ X0))\wedge(X1 = k1_domain_1\ (k3_cqc_lang\ X0)\ (k1_subst1\ X0)\ (k5_cqc_lang\ X0)\ X2)))) \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.k2_tarski\ X0\ X1 = k2_tarski\ X1\ X0 \quad (21)$$

Assume the following.

$$\forall X0.(v1_xboole_0\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0))\Rightarrow(v1_xboole_0\ X1)) \quad (22)$$

Theorem 1

$$\begin{aligned} & \forall X0.(m1_gc_lang1\ X0) \Rightarrow (\forall X1.(\neg v1_xboole_0\ X1) \Rightarrow (\\ & \quad \forall X2.(m1_valuat_1\ X2\ X0\ X1) \Rightarrow (\forall X3.(m2_subset_1\ X3 \\ & \quad (k16_subst1\ X0)\ (k38_subst1\ X0)) \Rightarrow ((v2_subst1\ X3\ X0) \Rightarrow (\forall X4. \\ & \quad (m2_funct_2\ X4\ (k3_gc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow ((r1_valuat_1 \\ & \quad X0\ X1\ (k39_subst1\ X0\ X3)\ X2\ X4) \Leftrightarrow (r1_sublemma\ X0\ X3\ X1\ (k1_sublemma \\ & \quad X0\ X1\ X4\ (k3_sublemma\ X0\ X3\ X1\ X4))\ X2)))))) \end{aligned}$$