

t49_sublemma

(TMVHDHLF9pd4pm1KZqmXLwaSNs2E153RLoA)

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 $k2_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k3_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12_sublemma : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ 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 $k7_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\forall X0. \forall X1. k1_funct_1 (k16_funcop_1 X0 X1) X0 = X1 \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (\forall X2. \\ & ((v1_relat_1 X2) \wedge (v1_funct_1 X2)) \Rightarrow ((X0 \in k9_xtuple_0 X1) \Rightarrow (k1_funct_1 \\ & (k1_funct_4 X2 X1) X0 = k1_funct_1 X1 X0))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (k9_xtuple_0 (k2_funcop_1 X0 X1) = X0) \wedge (\\ & r1_tarski (k10_xtuple_0 (k2_funcop_1 X0 X1)) (k1_tarski X1)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ & (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2. (m2_subset_1 \\ & X2 X0 X1) \Leftrightarrow (m1_subset_1 X2 X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X1) \wedge (m1_funct_2 \\ & X2 X0 X1)) \Rightarrow (\forall X3. (m2_funct_2 X3 X0 X1 X2) \Leftrightarrow (m1_subset_1 X3 \\ & X2)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.k7_funcop_1 X0 X1 = k2_funcop_1 X0 X1 \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0) \wedge \\ & (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1)))))) \wedge (m1_subset_1 X3 X0))) \Rightarrow (k3_funct_2 X0 \\ & X1 X2 X3 = k1_funct_1 X2 X3) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_qc_lang1 X0) \wedge (\neg v1_xboole_0 X1)) \Rightarrow \\ & (k2_valuat_1 X0 X1 = k1_valuat_1 X0 X1) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1 X0) \wedge \\ & ((\neg v1_xboole_0 X1) \wedge ((m1_subset_1 X2 (k2_valuat_1 X0 X1)) \wedge ((v1_funct_1 \\ & X3) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (k3_qc_lang1 X0) \\ & X1)))))) \Rightarrow (k1_sublemma X0 X1 X2 X3 = k1_funct_4 X2 X3) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1 X0) \wedge \\ & ((\neg v1_xboole_0 X1) \wedge ((m1_subset_1 X2 (k3_qc_lang1 X0)) \wedge (m1_subset_1 \\ & X3 X1)))) \Rightarrow (k12_sublemma X0 X1 X2 X3 = k16_funcop_1 X2 X3) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k3_qc_lang1 X0)) \quad (11)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k2_qc_lang1 X0)) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X1) \wedge (m1_funct_2 \\ & X2 X0 X1)) \Rightarrow (\forall X3.(m2_funct_2 X3 X0 X1 X2) \Rightarrow ((v1_funct_1 X3) \wedge \\ & ((v1_funct_2 X3 X0 X1) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (m1_subset_1 (k3_qc_lang1 X0) (k1_zfmisc_1 (k2_qc_lang1 X0))) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(\neg v1_xboole_0\ X1))\Rightarrow (m1_funct_2\ (k2_valuat_1\ X0\ X1)\ (k3_qc_lang1\ X0)\ X1) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1\ X0)\wedge ((\neg v1_xboole_0\ X1)\wedge((m1_subset_1\ X2\ (k2_valuat_1\ X0\ X1))\wedge((v1_funct_1\ X3)\wedge(m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k3_qc_lang1\ X0)\ X1))))))\Rightarrow(m2_funct_2\ (k1_sublemma\ X0\ X1\ X2\ X3)\ (k3_qc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1)) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1\ X0)\wedge ((\neg v1_xboole_0\ X1)\wedge((m1_subset_1\ X2\ (k3_qc_lang1\ X0))\wedge(m1_subset_1\ X3\ X1))))\Rightarrow((v1_funct_1\ (k12_sublemma\ X0\ X1\ X2\ X3))\wedge(m1_subset_1\ (k12_sublemma\ X0\ X1\ X2\ X3)\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k3_qc_lang1\ X0)\ X1)))) \quad (17)$$

Assume the following.

$$\forall X0.\forall X1.k16_funcop_1\ X0\ X1 = k7_funcop_1\ (k1_tarski\ X0)\ X1 \quad (18)$$

Assume the following.

$$\forall X0.\forall X1.(X1 = k1_tarski\ X0)\Leftrightarrow(\forall X2.(X2 \in X1)\Leftrightarrow (X2 = X0)) \quad (19)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X1)))\Rightarrow(v1_relat_1\ X2) \quad (20)$$

Theorem 1

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m2_subset_1\ X1\ (k2_qc_lang1\ X0)\ (k3_qc_lang1\ X0))\Rightarrow(\forall X2.(m2_subset_1\ X2\ (k2_qc_lang1\ X0)\ (k3_qc_lang1\ X0))\Rightarrow(\forall X3.(\neg v1_xboole_0\ X3)\Rightarrow(\forall X4.(m2_funct_2\ X4\ (k3_qc_lang1\ X0)\ X3\ (k2_valuat_1\ X0\ X3))\Rightarrow(\forall X5.(m1_subset_1\ X5\ X3)\Rightarrow((X1 = X2)\Rightarrow(k3_funct_2\ (k3_qc_lang1\ X0)\ X3\ (k1_sublemma\ X0\ X3\ X4\ (k12_sublemma\ X0\ X3\ X1\ X5))\ X2 = X5))))))$$