

t25_sublemma

(TMLZ6wSRXm8mRGxZ5rqzvgAasCMZKiEjRfy)

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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 $k19_subst1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k6_sublemma : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_cqc_lang : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(\neg v1_xboole_0 X1) \Rightarrow (\\
& \quad \forall X2.(m1_valuat_1 X2 X0 X1) \Rightarrow (\forall X3.(m2_funct_2 X3 (\\
& \quad k3_qc_lang1 X0) X1 (k2_valuat_1 X0 X1)) \Rightarrow (\forall X4.(m2_subset_1 \\
& \quad X4 (k16_subst1 X0) (k38_subst1 X0)) \Rightarrow (\forall X5.(m2_subset_1 \\
& \quad X5 (k16_subst1 X0) (k38_subst1 X0)) \Rightarrow ((k19_subst1 X0 X4 = \\
& \quad k19_subst1 X0 X5) \Rightarrow (((r1_sublemma X0 X4 X1 (k1_sublemma X0 X1 X3 \\
& \quad (k3_sublemma X0 X4 X1 X3)) X2) \wedge (r1_sublemma X0 X5 X1 (k1_sublemma \\
& \quad X0 X1 X3 (k3_sublemma X0 X5 X1 X3)) X2) \Leftrightarrow (r1_sublemma X0 (k6_sublemma \\
& \quad X0 X4 X5) X1 (k1_sublemma X0 X1 X3 (k3_sublemma X0 (k6_sublemma X0 \\
& \quad X4 X5) X1 X3)) X2)))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m2_subset_1 X1 (k16_subst1 \\
& \quad X0) (k38_subst1 X0)) \Rightarrow (\forall X2.(m2_subset_1 X2 (k16_subst1 \\
& \quad X0) (k38_subst1 X0)) \Rightarrow ((k19_subst1 X0 X1 = k19_subst1 X0 X2) \Rightarrow \\
& \quad (k39_subst1 X0 (k6_sublemma X0 X1 X2) = k7_cqc_lang X0 (k39_subst1 \\
& \quad X0 X1) (k39_subst1 X0 X2))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(\neg v1_xboole_0\ X1) \Rightarrow (\\ & \forall X2.(m2_funct_2\ X2\ (k3_qc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow \\ & (\forall X3.(m2_subset_1\ X3\ (k9_qc_lang1\ X0)\ (k3_cqc_lang\ X0)) \Rightarrow \\ & (\forall X4.(m2_subset_1\ X4\ (k9_qc_lang1\ X0)\ (k3_cqc_lang\ X0)) \Rightarrow \\ & (\forall X5.(m1_valuat_1\ X5\ X0\ X1) \Rightarrow ((r1_valuat_1\ X0\ X1\ (k7_cqc_lang \\ & X0\ X3\ X4)\ X5\ X2) \Leftrightarrow ((r1_valuat_1\ X0\ X1\ X3\ X5\ X2) \wedge (r1_valuat_1\ X0\ X1\ X4 \\ & X5\ X2))))))))) \end{aligned} \quad (3)$$

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.

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

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_qc_lang1\ X0) \wedge (m1_subset_1\ X1\ (k38_subst1 \\ & X0))) \Rightarrow (m2_subset_1\ (k39_subst1\ X0\ X1)\ (k9_qc_lang1\ X0)\ (k3_cqc_lang \\ & X0)) \end{aligned} \quad (6)$$

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.

$$\forall X0.(v1_xboole_0\ X0) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (k1_zfmisc_1\ X0)) \Rightarrow (v1_xboole_0\ X1)) \quad (8)$$

Theorem 1

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(\neg v1_xboole_0\ X1) \Rightarrow (\\ & \forall X2.(m1_valuat_1\ X2\ X0\ X1) \Rightarrow (\forall X3.(m2_subset_1\ X3 \\ & (k16_subst1\ X0)\ (k38_subst1\ X0)) \Rightarrow (\forall X4.(m2_subset_1 \\ & X4\ (k16_subst1\ X0)\ (k38_subst1\ X0)) \Rightarrow (((k19_subst1\ X0\ X3 = \\ & k19_subst1\ X0\ X4) \wedge ((\forall X5.(m2_funct_2\ X5\ (k3_qc_lang1 \\ & X0)\ X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow ((r1_valuat_1\ X0\ X1\ (k39_subst1\ X0 \\ & X3)\ X2\ X5) \Leftrightarrow (r1_sublemma\ X0\ X3\ X1\ (k1_sublemma\ X0\ X1\ X5\ (k3_sublemma \\ & X0\ X3\ X1\ X5))\ X2))) \wedge (\forall X5.(m2_funct_2\ X5\ (k3_qc_lang1\ X0) \\ & X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow ((r1_valuat_1\ X0\ X1\ (k39_subst1\ X0\ X4) \\ & X2\ X5) \Leftrightarrow (r1_sublemma\ X0\ X4\ X1\ (k1_sublemma\ X0\ X1\ X5\ (k3_sublemma\ X0 \\ & X4\ X1\ X5))\ X2)))))) \Rightarrow (\forall X5.(m2_funct_2\ X5\ (k3_qc_lang1\ X0) \\ & X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow ((r1_valuat_1\ X0\ X1\ (k39_subst1\ X0\ (k6_sublemma \\ & X0\ X3\ X4))\ X2\ X5) \Leftrightarrow (r1_sublemma\ X0\ (k6_sublemma\ X0\ X3\ X4)\ X1\ (k1_sublemma \\ & X0\ X1\ X5\ (k3_sublemma\ X0\ (k6_sublemma\ X0\ X3\ X4)\ X1\ X5))\ X2))))))))) \end{aligned}$$