

t14_valuat_1 (TM-
LeurK5hUQnVzrMVL3WxfzsQHe3ceEDVTf)

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Let $m1_qc_lang1 : \iota \Rightarrow o$ 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 $k3_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k2_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $m1_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_margrel1 : \iota$ be given. Let $k8_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_cqc_lang : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_cqc_lang : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_margrel1 : \iota$ be given. Let $k10_margrel1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboolean : \iota \Rightarrow o$ be given. Let $k4_xboolean : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_margrel1 : \iota$ be given. Let $k3_xboolean : \iota \Rightarrow \iota$ be given. Let $k9_margrel1 : \iota \Rightarrow \iota$ 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 $k2_xboolean : \iota$ be given. Let $k1_xboolean : \iota$ be given. Let $k1_valuat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ 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 $k9_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(\neg v1_xboole_0 X1) \Rightarrow (\\
 & \forall X2.(m2_funct_2 X2 (k3_qc_lang1 X0) X1 (k2_valuat_1 X0 X1)) \Rightarrow \\
 & (\forall X3.(m2_subset_1 X3 (k9_qc_lang1 X0) (k3_cqc_lang X0)) \Rightarrow \\
 & (\forall X4.(m2_subset_1 X4 (k9_qc_lang1 X0) (k3_cqc_lang X0)) \Rightarrow \\
 & (\forall X5.(m1_valuat_1 X5 X0 X1) \Rightarrow (k3_funct_2 (k2_valuat_1 X0 \\
 & X1) k6_margrel1 (k8_valuat_1 X0 X1 X5 (k7_cqc_lang X0 X3 X4)) X2 = \\
 & k10_margrel1 (k3_funct_2 (k2_valuat_1 X0 X1) k6_margrel1 (k8_valuat_1 \\
 & X0 X1 X5 X3) X2) (k3_funct_2 (k2_valuat_1 X0 X1) k6_margrel1 (k8_valuat_1 \\
 & X0 X1 X5 X4) X2))))))
 \end{aligned}
 \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1_xboolean\ X0) \Rightarrow (\forall X1.(v1_xboolean\ X1) \Rightarrow ((\\ & (k4_xboolean\ X0\ X1 = k8_margrel1) \Rightarrow ((X0 = k8_margrel1) \wedge (X1 = k8_margrel1))) \wedge \\ & (((X0 = k8_margrel1) \wedge (X1 = k8_margrel1)) \Rightarrow (k4_xboolean\ X0\ X1 = \\ & k8_margrel1)) \wedge ((\neg(k4_xboolean\ X0\ X1 = k7_margrel1) \wedge ((X0 \neq k7_margrel1) \wedge \\ & (X1 \neq k7_margrel1))) \wedge (((X0 = k7_margrel1) \vee (X1 = k7_margrel1)) \Rightarrow \\ & (k4_xboolean\ X0\ X1 = k7_margrel1)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1_xboolean\ X0) \Rightarrow (((X0 = k7_margrel1) \Rightarrow (k3_xboolean \\ & X0 = k8_margrel1)) \wedge (((k3_xboolean\ X0 = k8_margrel1) \Rightarrow (X0 = k7_margrel1)) \wedge \\ & (((X0 = k8_margrel1) \Rightarrow (k3_xboolean\ X0 = k7_margrel1)) \wedge ((k3_xboolean \\ & X0 = k7_margrel1) \Rightarrow (X0 = k8_margrel1)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(\neg v1_xboole_0\ X1) \Rightarrow (\\ & \forall X2.(m2_funct_2\ X2\ (k3_qc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow \\ & (\forall X3.(m2_subset_1\ X3\ (k9_qc_lang1\ X0)\ (k3_cqc_lang\ X0)) \Rightarrow \\ & (\forall X4.(m1_valuat_1\ X4\ X0\ X1) \Rightarrow (k3_funct_2\ (k2_valuat_1\ X0 \\ & X1)\ k6_margrel1\ (k8_valuat_1\ X0\ X1\ X4\ (k6_cqc_lang\ X0\ X3))\ X2 = k9_margrel1 \\ & (k3_funct_2\ (k2_valuat_1\ X0\ X1)\ k6_margrel1\ (k8_valuat_1\ X0\ X1 \\ & X4\ X3)\ X2)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1_xboole_0\ X0) \wedge ((\neg v1_xboole_0\ X1) \wedge \\ & (m1_subset_1\ X1\ (k1_zfmisc_1\ X0)))) \Rightarrow (\forall X2.(m2_subset_1 \\ & X2\ X0\ X1) \Leftrightarrow (m1_subset_1\ X2\ X1)) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0\ X1) \wedge (m1_funct_2 \\ & X2\ X0\ X1)) \Rightarrow (\forall X3.(m2_funct_2\ X3\ X0\ X1\ X2) \Leftrightarrow (m1_subset_1\ X3 \\ & X2)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.(m1_subset_1\ X0\ k6_margrel1) \Rightarrow (k9_margrel1\ X0 = k3_xboolean \\ & X0) \end{aligned} \quad (7)$$

Assume the following.

$$k8_margrel1 = k2_xboolean \quad (8)$$

Assume the following.

$$k7_margrel1 = k1_xboolean \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(\neg v1_xboole_0\ X1))\Rightarrow (k2_valuat_1\ X0\ X1 = k1_valuat_1\ X0\ X1) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1\ X0\ k6_margrel1)\wedge(m1_subset_1\ X1\ k6_margrel1))\Rightarrow(k10_margrel1\ X0\ X1 = k4_xboolean\ X0\ X1) \quad (11)$$

Assume the following.

$$\forall X0.(m1_subset_1\ X0\ k6_margrel1)\Rightarrow(k9_margrel1\ (k9_margrel1\ X0) = X0) \quad (12)$$

Assume the following.

$$\forall X0.(v1_xboolean\ X0)\Rightarrow(k3_xboolean\ (k3_xboolean\ X0) = X0) \quad (13)$$

Assume the following.

$$\neg v1_xboole_0\ k6_margrel1 \quad (14)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\neg v1_xboole_0\ (k3_qc_lang\ X0)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(\neg v1_xboole_0\ X1))\Rightarrow ((v4_funct_1\ (k1_valuat_1\ X0\ X1))\wedge(\neg v1_xboole_0\ (k1_valuat_1\ X0\ X1))) \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0\ X1)\wedge(m1_funct_2\ X2\ X0\ X1))\Rightarrow(\forall X3.(m2_funct_2\ X3\ X0\ X1\ X2)\Rightarrow((v1_funct_1\ X3)\wedge((v1_funct_2\ X3\ X0\ X1)\wedge(m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_zfmisc_1\ X0\ X1)))))) \quad (17)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\neg v1_xboole_0\ (k9_qc_lang1\ X0)) \quad (18)$$

Assume the following.

$$\forall X0.\forall X1.(\neg v1_xboole_0\ X1)\Rightarrow(m1_funct_2\ (k9_funct_2\ X0\ X1)\ X0\ X1) \quad (19)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((m1_qc_lang1 X0)\wedge \\ & ((\neg v1_xboole_0 X1)\wedge((m1_valuat_1 X2 X0 X1)\wedge(m1_subset_1 X3 (k3_cqc_lang \\ & X0))))\Rightarrow(m2_funct_2 (k8_valuat_1 X0 X1 X2 X3) (k2_valuat_1 X0 X1) \\ & k6_margrel1 (k9_funct_2 (k2_valuat_1 X0 X1) k6_margrel1)) \end{aligned} \quad (20)$$

Assume the following.

$$m1_subset_1 k8_margrel1 k6_margrel1 \quad (21)$$

Assume the following.

$$m1_subset_1 k7_margrel1 k6_margrel1 \quad (22)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_qc_lang1 X0)\wedge(m1_subset_1 X1 (k3_cqc_lang \\ & X0)))\Rightarrow(m2_subset_1 (k6_cqc_lang X0 X1) (k9_qc_lang1 X0) (k3_cqc_lang \\ & X0)) \end{aligned} \quad (23)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0)\wedge \\ & (((v1_funct_1 X2)\wedge((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))))\wedge(m1_subset_1 X3 X0)))\Rightarrow(m1_subset_1 (\\ & k3_funct_2 X0 X1 X2 X3) X1) \end{aligned} \quad (24)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0)\Rightarrow(m1_subset_1 (k3_cqc_lang X0) (k1_zfmisc_1 (k9_qc_lang1 X0))) \quad (25)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((m1_qc_lang1 X0)\wedge(\neg v1_xboole_0 X1))\Rightarrow \\ & (m1_funct_2 (k2_valuat_1 X0 X1) (k3_qc_lang1 X0) X1) \end{aligned} \quad (26)$$

Assume the following.

$$\forall X0.(v1_xboolean X0)\Leftrightarrow((X0 = k1_xboolean)\vee(X0 = k2_xboolean)) \quad (27)$$

Assume the following.

$$k2_xboolean = np_1 \quad (28)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k6_margrel1)\Rightarrow(v1_xboolean X0) \quad (29)$$

Theorem 1

$$\begin{aligned} & \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(\neg v1_xboole_0\ X1) \Rightarrow (\\ & \forall X2.(m2_funct_2\ X2\ (k3_qc_lang1\ X0)\ X1\ (k2_valuat_1\ X0\ X1)) \Rightarrow \\ & (\forall X3.(m2_subset_1\ X3\ (k9_qc_lang1\ X0)\ (k3_cqc_lang\ X0)) \Rightarrow \\ & (\forall X4.(m1_valuat_1\ X4\ X0\ X1) \Rightarrow (k3_funct_2\ (k2_valuat_1\ X0 \\ & X1)\ k6_margrel1\ (k8_valuat_1\ X0\ X1\ X4\ (k7_cqc_lang\ X0\ X3\ (k6_cqc_lang \\ & X0\ X3)))\ X2 = k7_margrel1)))))) \end{aligned}$$