

t33_qc_lang2

(TMKuGBR83PaP1KYeAopChe3HcFbbfD2HyJi)

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Let $m1_qc_lang1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $v1_qc_lang2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_qc_lang2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k18_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k19_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k20_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12_qc_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_qc_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11_qc_lang2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k13_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_qc_lang2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k9_qc_lang1 \\ X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (k9_qc_lang1 X0)) \Rightarrow ((k19_qc_lang1 \\ X0 (k14_qc_lang1 X0 X1 X2) = X1) \wedge (k20_qc_lang1 X0 (k14_qc_lang1 \\ X0 X1 X2) = X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k9_qc_lang1 \\ X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (k9_qc_lang1 X0)) \Rightarrow ((k12_qc_lang2 \\ X0 (k2_qc_lang2 X0 X1 X2) = X1) \wedge ((k11_qc_lang2 X0 (k2_qc_lang2 X0 \\ X1 X2) = X2) \wedge (k18_qc_lang1 X0 (k2_qc_lang2 X0 X1 X2) = k14_qc_lang1 \\ X0 X1 (k13_qc_lang1 X0 X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1_qc_lang1 X0) \wedge ((m1_subset_1 \\ X1 (k9_qc_lang1 X0)) \wedge (m1_subset_1 X2 (k9_qc_lang1 X0)))) \Rightarrow (m1_subset_1 \\ (k2_qc_lang2 X0 X1 X2) (k9_qc_lang1 X0)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((m1_qc_lang1 X0) \wedge (m1_subset_1 X1 (k9_qc_lang1 \\ X0))) \Rightarrow (m1_subset_1 (k18_qc_lang1 X0 X1) (k9_qc_lang1 X0)) \end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1\ X0)\wedge((m1_subset_1\ X1\ (k9_qc_lang1\ X0))\wedge(m1_subset_1\ X2\ (k9_qc_lang1\ X0))))\Rightarrow(m1_subset_1\ (k14_qc_lang1\ X0\ X1\ X2)\ (k9_qc_lang1\ X0)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(m1_subset_1\ X1\ (k9_qc_lang1\ X0)))\Rightarrow(m1_subset_1\ (k13_qc_lang1\ X0\ X1)\ (k9_qc_lang1\ X0)) \quad (6)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\Rightarrow(k3_qc_lang2\ X0\ X1\ X2 = k13_qc_lang1\ X0\ (k14_qc_lang1\ X0\ (k13_qc_lang1\ X0\ X1)\ (k13_qc_lang1\ X0\ X2)))))) \quad (7)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\Rightarrow(k2_qc_lang2\ X0\ X1\ X2 = k13_qc_lang1\ X0\ (k14_qc_lang1\ X0\ X1\ (k13_qc_lang1\ X0\ X2)))))) \quad (8)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow((v4_qc_lang1\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\wedge(\exists X3.(m1_subset_1\ X3\ (k9_qc_lang1\ X0))\wedge(X1 = k14_qc_lang1\ X0\ X2\ X3)))))) \quad (9)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow((v3_qc_lang1\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\wedge(X1 = k13_qc_lang1\ X0\ X2)))))) \quad (10)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow((v2_qc_lang2\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\wedge(\exists X3.(m1_subset_1\ X3\ (k9_qc_lang1\ X0))\wedge(X1 = k2_qc_lang2\ X0\ X2\ X3)))))) \quad (11)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow((v1_qc_lang2\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\wedge(\exists X3.(m1_subset_1\ X3\ (k9_qc_lang1\ X0))\wedge(X1 = k3_qc_lang2\ X0\ X2\ X3)))))) \quad (12)$$

Theorem 1

$$\begin{aligned} \forall X0.(m1_qc_lang1\ X0) \Rightarrow (\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1 \\ X0)) \Rightarrow ((v1_qc_lang2\ X1\ X0) \Rightarrow ((v2_qc_lang2\ X1\ X0) \wedge ((v3_qc_lang1 \\ X1\ X0) \wedge ((v4_qc_lang1\ (k18_qc_lang1\ X0\ X1)\ X0) \wedge ((v3_qc_lang1\ (\\ k19_qc_lang1\ X0\ (k18_qc_lang1\ X0\ X1))\ X0) \wedge (v3_qc_lang1\ (k20_qc_lang1 \\ X0\ (k18_qc_lang1\ X0\ X1))\ X0)))))) \end{aligned}$$