

t42_qc_lang3
(TMK5eFPfrs517tspD9jfN9F2wzpKph9L1BN)

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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 $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k4_qc_lang3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k12_qc_lang1 : \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $v2_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_qc_lang3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k17_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v3_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k18_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_qc_lang1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k22_qc_lang1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.((\neg v1_xboole_0 X1) \wedge \\ (m1_subset_1 X1 (k1_zfmisc_1 (k2_qc_lang1 X0)))) \Rightarrow ((k4_qc_lang3 \\ X0 X1 (k12_qc_lang1 X0) = k1_xboole_0) \wedge ((\forall X2.(m1_subset_1 \\ X2 (k9_qc_lang1 X0)) \Rightarrow ((v2_qc_lang1 X2 X0) \Rightarrow (k4_qc_lang3 X0 X1 X2 = \\ k1_qc_lang3 X0 (k17_qc_lang1 X0 X2) X1))) \wedge ((\forall X2.(m1_subset_1 \\ X2 (k9_qc_lang1 X0)) \Rightarrow ((v3_qc_lang1 X2 X0) \Rightarrow (k4_qc_lang3 X0 X1 X2 = \\ k4_qc_lang3 X0 X1 (k18_qc_lang1 X0 X2)))) \wedge ((\forall X2.(m1_subset_1 \\ X2 (k9_qc_lang1 X0)) \Rightarrow ((v4_qc_lang1 X2 X0) \Rightarrow (k4_qc_lang3 X0 X1 X2 = \\ k4_subset_1 X1 (k4_qc_lang3 X0 X1 (k19_qc_lang1 X0 X2)) (k4_qc_lang3 \\ X0 X1 (k20_qc_lang1 X0 X2)))))) \wedge (\forall X2.(m1_subset_1 X2 (k9_qc_lang1 \\ X0)) \Rightarrow ((v5_qc_lang1 X2 X0) \Rightarrow (k4_qc_lang3 X0 X1 X2 = k4_qc_lang3 X0 \\ X1 (k22_qc_lang1 X0 X2)))))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1\ X0)\wedge((m1_subset_1\ X1\ (k9_qc_lang1\ X0))\wedge(m1_subset_1\ X2\ (k9_qc_lang1\ X0))))\Rightarrow(m1_subset_1\ (k14_qc_lang1\ X0\ X1\ X2)\ (k9_qc_lang1\ X0)) \quad (3)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow((v4_qc_lang1\ X1\ X0)\Leftrightarrow(\exists X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\wedge(\exists X3.(m1_subset_1\ X3\ (k9_qc_lang1\ X0))\wedge(X1 = k14_qc_lang1\ X0\ X2\ X3)))))) \quad (4)$$

Theorem 1

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\Rightarrow(\forall X3.((\neg v1_xboole_0\ X3)\wedge(m1_subset_1\ X3\ (k1_zfmisc_1\ (k2_qc_lang1\ X0))))\Rightarrow(k4_qc_lang3\ X0\ X3\ (k14_qc_lang1\ X0\ X1\ X2) = k4_subset_1\ X3\ (k4_qc_lang3\ X0\ X3\ X1)\ (k4_qc_lang3\ X0\ X3\ X2))))))$$