

t31_qc_lang4 (TMSFe- GAP1GXotcbFp4ZeMyAUKQKh6L1RBT6)

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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 $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $m1_trees_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k2_qc_lang4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_qc_lang4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_trees_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_trees_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_trees_1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v3_trees_2 : \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m4_trees_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k2_trees_9 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_qc_lang4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.(m1_qc_lang1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k9_qc_lang1 \\ X0)) \Rightarrow (\forall X2.(m1_trees_1 X2 (k9_xtuple_0 (k2_qc_lang4 X0 \\ X1))) \Rightarrow (k5_trees_2 (k2_qc_lang4 X0 X1) X2 = k2_qc_lang4 X0 (k3_trees_2 \\ (k9_qc_lang1 X0) (k2_qc_lang4 X0 X1) X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_trees_1 X0)) \Rightarrow (\forall X1. \\ (m1_trees_1 X1 X0) \Leftrightarrow (m1_subset_1 X1 X0)) \quad (2)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v3_trees_2 X0))) \Rightarrow \\ ((\neg v1_xboole_0 (k9_xtuple_0 X0)) \wedge (v1_trees_1 (k9_xtuple_0 X0))) \quad (3)$$

Assume the following.

$$\forall X0.(m1_qc_lang1 X0) \Rightarrow (\neg v1_xboole_0 (k9_qc_lang1 X0)) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\ X1) \wedge ((v5_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v3_trees_2 X1)))) \wedge \\ (m1_subset_1 X2 (k9_xtuple_0 X1)))) \Rightarrow (m1_subset_1 (k3_trees_2 \\ X0 X1 X2) X0) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1_qc_lang1\ X0)\wedge((m1_subset_1\ X1\ (k9_qc_lang1\ X0))\wedge(m1_subset_1\ X2\ (k9_qc_lang1\ X0))))\Rightarrow(m4_trees_1\ (k3_qc_lang4\ X0\ X1\ X2)\ (k9_xtuple_0\ (k2_qc_lang4\ X0\ X1))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((m1_qc_lang1\ X0)\wedge(m1_subset_1\ X1\ (k9_qc_lang1\ X0)))\Rightarrow((v1_relat_1\ (k2_qc_lang4\ X0\ X1))\wedge((v5_relat_1\ (k2_qc_lang4\ X0\ X1)\ (k9_qc_lang1\ X0))\wedge((v1_funct_1\ (k2_qc_lang4\ X0\ X1))\wedge((v1_finset_1\ (k2_qc_lang4\ X0\ X1))\wedge(v3_trees_2\ (k2_qc_lang4\ X0\ X1)))))) \quad (7)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\Rightarrow(\forall X3.(m4_trees_1\ X3\ (k9_xtuple_0\ (k2_qc_lang4\ X0\ X1)))\Rightarrow((X3 = k3_qc_lang4\ X0\ X1\ X2)\Leftrightarrow(\forall X4.(m1_trees_1\ X4\ (k9_xtuple_0\ (k2_qc_lang4\ X0\ X1)))\Rightarrow((X4 \in X3)\Leftrightarrow(k3_trees_2\ (k9_qc_lang1\ X0)\ (k2_qc_lang4\ X0\ X1)\ X4 = X2)))))) \quad (8)$$

Assume the following.

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.((v1_relat_1\ X2)\wedge((v5_relat_1\ X2\ (k9_qc_lang1\ X0))\wedge((v1_funct_1\ X2)\wedge((v1_finset_1\ X2)\wedge(v3_trees_2\ X2))))))\Rightarrow((X2 = k2_qc_lang4\ X0\ X1)\Leftrightarrow((k1_funct_1\ X2\ k1_xboole_0 = X1)\wedge(\forall X3.(m1_trees_1\ X3\ (k9_xtuple_0\ X2))\Rightarrow(k2_trees_9\ X2\ X3 = k1_qc_lang4\ X0\ (k3_trees_2\ (k9_qc_lang1\ X0)\ X2\ X3)))))) \quad (9)$$

Theorem 1

$$\forall X0.(m1_qc_lang1\ X0)\Rightarrow(\forall X1.(m1_subset_1\ X1\ (k9_qc_lang1\ X0))\Rightarrow(\forall X2.(m1_subset_1\ X2\ (k9_qc_lang1\ X0))\Rightarrow(\forall X3.(m1_trees_1\ X3\ (k9_xtuple_0\ (k2_qc_lang4\ X0\ X1)))\Rightarrow((X3 \in k3_qc_lang4\ X0\ X1\ X2)\Leftrightarrow(k5_trees_2\ (k2_qc_lang4\ X0\ X1)\ X3 = k2_qc_lang4\ X0\ X2))))))$$