

t12_fsm_3

(TMTzH8HZh5LHZEYh8Xh4CBKhZSkkFLHm7ch)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k8_afinsq_1 : \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_rewrite3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r3_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_flang_1 : \iota \Rightarrow \iota$ be given. Let $k1_fsm_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_flang_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_flang_1 : \iota \Rightarrow \iota$ be given. Let $r2_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $u1_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_catalan2 : \iota \Rightarrow \iota$ be given. Let $v1_rewrite3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_rewrite3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_flang_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (\neg v1_xboole_0 X2) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 X2) \Rightarrow (\forall X4. (m1_subset_1 X4 (k1_zfmisc_1 \\ & (k8_afinsq_1 X2))) \Rightarrow (\forall X5. ((\neg v2_struct_0 X5) \wedge (l1_rewrite3 \\ & X5 X4)) \Rightarrow ((r3_rewrite3 X2 X4 X5 X0 (k3_flang_1 X2 X3) X1 (k2_flang_1 \\ & X2)) \Rightarrow ((k2_flang_1 X2 \in k10_xtuple_0 (k9_xtuple_0 (u1_rewrite3 \\ & X4 X5))) \vee (r2_rewrite3 X2 X4 X5 X0 (k3_flang_1 X2 X3) X1 (k2_flang_1 \\ & X2)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. k3_catalan2 X0 = k8_afinsq_1 X0 \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge ((m1_subset_1 \\ & X1 (k1_zfmisc_1 (k8_afinsq_1 X0))) \wedge ((\neg v2_struct_0 X2) \wedge (l1_rewrite3 \\ & X2 X1)))) \Rightarrow ((\neg v2_struct_0 (k1_fsm_3 X0 X1 X2)) \wedge ((v1_rewrite3 (\\ & k1_fsm_3 X0 X1 X2) (k9_flang_1 X0)) \wedge (v2_rewrite3 (k1_fsm_3 X0 X1 \\ & X2) X0 (k9_flang_1 X0)))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0. m1_subset_1 (k9_flang_1 X0) (k1_zfmisc_1 (k3_catalan2 X0)) \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge((m1_subset_1 \\ & X1 (k1_zfmisc_1 (k8_afinsq_1 X0)))\wedge((\neg v2_struct_0 X2)\wedge(l1_rewrite3 \\ & X2 X1))))\Rightarrow((v1_rewrite3 (k1_fsm_3 X0 X1 X2) (k9_flang_1 X0))\wedge(\\ & l1_rewrite3 (k1_fsm_3 X0 X1 X2) (k9_flang_1 X0))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0)\Rightarrow(\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 \\ & (k8_afinsq_1 X0)))\Rightarrow(\forall X2.(l1_rewrite3 X2 X1)\Rightarrow((v2_rewrite3 \\ & X2 X0 X1)\Leftrightarrow(((v1_relat_1 (u1_rewrite3 X1 X2))\wedge(v1_funct_1 (u1_rewrite3 \\ & X1 X2)))\wedge((\neg k2_flang_1 X0 \in k10_xtuple_0 (k9_xtuple_0 (u1_rewrite3 \\ & X1 X2))))\wedge(\forall X3.(m1_subset_1 X3 (u1_struct_0 X2))\Rightarrow(\forall X4. \\ & (m1_subset_1 X4 (k8_afinsq_1 X0))\Rightarrow(\forall X5.(m1_subset_1 X5 \\ & (k8_afinsq_1 X0))\Rightarrow(((k4_tarski X3 X4 \in k9_xtuple_0 (u1_rewrite3 \\ & X1 X2))\wedge(k4_tarski X3 X5 \in k9_xtuple_0 (u1_rewrite3 X1 X2)))\Rightarrow((\\ & X4 = X5)\vee(\forall X6.(m1_subset_1 X6 (k8_afinsq_1 X0))\Rightarrow((k1_flang_1 \\ & X0 X4 X6\neq X5)\wedge(k1_flang_1 X0 X5 X6\neq X4)))))))))) \end{aligned} \quad (6)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(\neg v1_xboole_0 X2)\Rightarrow(\forall X3. \\ & (m1_subset_1 X3 X2)\Rightarrow(\forall X4.(m1_subset_1 X4 (k1_zfmisc_1 \\ & (k8_afinsq_1 X2)))\Rightarrow(\forall X5.((\neg v2_struct_0 X5)\wedge(l1_rewrite3 \\ & X5 X4))\Rightarrow((r3_rewrite3 X2 (k9_flang_1 X2) (k1_fsm_3 X2 X4 X5) X0 (\\ & k3_flang_1 X2 X3) X1 (k2_flang_1 X2))\Rightarrow(r2_rewrite3 X2 (k9_flang_1 \\ & X2) (k1_fsm_3 X2 X4 X5) X0 (k3_flang_1 X2 X3) X1 (k2_flang_1 X2)))))) \end{aligned}$$