

t39_scm_halt
(TMLdRSffDwyF7o8TrQZV359UJwhvz8T8HAr)

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Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_compos_1 : \iota \Rightarrow \iota$ be given. Let $k1_scmfsa_2 : \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v5_funct_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_3 : \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $v1_afinsq_1 : \iota \Rightarrow o$ be given. Let $v1_ami_2 : \iota \Rightarrow o$ be given. Let $v1_scmfsa_m : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_scm_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_scm_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $k2_scmfsa8b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_scmfsa_m : \iota \Rightarrow \iota$ be given. Let $m1_scmfsa_2 : \iota \Rightarrow o$ be given. Let $k18_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r6_scmfsa7b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r5_scmfsa7b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((\forall X1. \\
& ((v1_ami_2 X1) \wedge ((\neg v1_scmfsa_m X1) \wedge (m1_subset_1 X1 (u1_struct_0 \\
& k1_scmfsa_2)))) \Rightarrow (k1_funct_1 (k1_scmfsa_m X0) X1 = k1_funct_1 \\
& X0 X1)) \wedge (\forall X1. (m1_scmfsa_2 X1) \Rightarrow (k18_scmfsa_2 (k1_scmfsa_m \\
& X0) X1 = k18_scmfsa_2 X0 X1)))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmf_sa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow ((r2_scm_halt X2 X1 X0) \Leftrightarrow (r6_scmf_sa7b X2 (k1_scmf_sa_m \\
& X1) X0))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmf_sa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow ((r1_scm_halt X2 X1 X0) \Leftrightarrow (r5_scmf_sa7b X2 (k1_scmf_sa_m \\
& X1) X0))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmf_sa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow (\forall X3.((\neg v1_xboole_0 X3) \wedge ((v1_relat_1 X3) \wedge \\
& ((v4_relat_1 X3 k5_numbers) \wedge ((v5_relat_1 X3 (u1_compos_1 k1_scmf_sa_2)) \wedge \\
& ((v1_funct_1 X3) \wedge ((v1_finset_1 X3) \wedge (v1_afinsq_1 X3)))))) \Rightarrow \\
& (\forall X4.((v1_ami_2 X4) \wedge ((\neg v1_scmf_sa_m X4) \wedge (m1_subset_1 \\
& X4 (u1_struct_0 k1_scmf_sa_2)))))) \Rightarrow (((r5_scmf_sa7b X2 X1 X0) \wedge (r6_scmf_sa7b \\
& X2 X1 X0)) \Rightarrow ((r1_xxreal_0 (k1_funct_1 X1 X4) k6_numbers) \vee ((r5_scmf_sa7b \\
& (k2_scmf_sa8b X4 X2 X3) X1 X0) \wedge (r6_scmf_sa7b (k2_scmf_sa8b X4 X2 X3) \\
& X1 X0))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmf_sa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmf_sa_2)))))) \Rightarrow ((v1_relat_1 \\
& (k1_scmf_sa_m X0)) \wedge ((v4_relat_1 (k1_scmf_sa_m X0) (u1_struct_0 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 (k1_scmf_sa_m X0)) \wedge ((v5_funct_1 \\
& (k1_scmf_sa_m X0) (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 \\
& (k1_scmf_sa_m X0) (u1_struct_0 k1_scmf_sa_2))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((v1_ami_2 X0) \wedge (m1_subset_1 \\
& X0 (u1_struct_0 k1_scmf_sa_2))) \wedge (((\neg v1_xboole_0 X1) \wedge ((v1_relat_1 \\
& X1) \wedge ((v4_relat_1 X1 k5_numbers) \wedge ((v5_relat_1 X1 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v1_finset_1 X1) \wedge (v1_afinsq_1 \\
& X1)))))) \wedge ((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 X2) \wedge ((v4_relat_1 \\
& X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 k1_scmf_sa_2)) \wedge \\
& (v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 X2))))))))) \Rightarrow \\
& ((\neg v1_xboole_0 (k2_scmf_sa8b X0 X1 X2)) \wedge ((v1_relat_1 (k2_scmf_sa8b \\
& X0 X1 X2)) \wedge ((v4_relat_1 (k2_scmf_sa8b X0 X1 X2) k5_numbers) \wedge ((v5_relat_1 \\
& (k2_scmf_sa8b X0 X1 X2) (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 \\
& (k2_scmf_sa8b X0 X1 X2)) \wedge ((v1_finset_1 (k2_scmf_sa8b X0 X1 X2)) \wedge \\
& (v1_afinsq_1 (k2_scmf_sa8b X0 X1 X2)))))))))
\end{aligned} \tag{6}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmf_sa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow (\forall X3.((\neg v1_xboole_0 X3) \wedge ((v1_relat_1 X3) \wedge \\
& ((v4_relat_1 X3 k5_numbers) \wedge ((v5_relat_1 X3 (u1_compos_1 k1_scmf_sa_2)) \wedge \\
& ((v1_funct_1 X3) \wedge ((v1_finset_1 X3) \wedge (v1_afinsq_1 X3)))))) \Rightarrow \\
& (\forall X4.((v1_ami_2 X4) \wedge ((\neg v1_scmf_sa_m X4) \wedge (m1_subset_1 \\
& X4 (u1_struct_0 k1_scmf_sa_2)))) \Rightarrow (((r1_scm_halt X2 X1 X0) \wedge (r2_scm_halt \\
& X2 X1 X0)) \Rightarrow ((r1_xreal_0 (k1_funct_1 X1 X4) k6_numbers) \vee ((r1_scm_halt \\
& (k2_scmf_sa8b X4 X2 X3) X1 X0) \wedge (r2_scm_halt (k2_scmf_sa8b X4 X2 X3) \\
& X1 X0))))))
\end{aligned}$$