

t8_scmisort (TMJW-
pHUB3coSVm51c9LhS65zj2YUMBqH9HC)

October 27, 2020

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 $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $r2_scm_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_scmfsa_9 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_scm_halt : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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. 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. Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmfsa_2)))))) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge ((v4_relat_1 \\
& X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 k1_scmfsa_2)) \wedge \\
& (\neg v1_xboole_0 X2) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow (\forall X3.((v1_ami_2 X3) \wedge ((\neg v1_scmfsa_m X3) \wedge (m1_subset_1 \\
& X3 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((r1_xxreal_0 (k1_funct_1 X1 \\
& X3) k6_numbers) \Rightarrow ((r6_scmfsa7b (k2_scmfsa_9 X3 X2) X1 X0) \wedge (r5_scmfsa7b \\
& (k2_scmfsa_9 X3 X2) X1 X0))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((\forall X1. \\
& ((v1_ami_2 X1) \wedge ((\neg v1_scmfsa_m X1) \wedge (m1_subset_1 X1 (u1_struct_0 \\
& k1_scmfsa_2)))) \Rightarrow (k1_funct_1 (k1_scmfsa_m X0) X1 = k1_funct_1 \\
& X0 X1)) \wedge (\forall X1.(m1_scmfsa_2 X1) \Rightarrow (k18_scmfsa_2 (k1_scmfsa_m \\
& X0) X1 = k18_scmfsa_2 X0 X1)))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmfsa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmfsa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow ((r2_scm_halt X2 X1 X0) \Leftrightarrow (r6_scmfsa7b X2 (k1_scmfsa_m \\
& X1) X0)))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))))) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmfsa_2)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmfsa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow ((r1_scm_halt X2 X1 X0) \Leftrightarrow (r5_scmfsa7b X2 (k1_scmfsa_m \\
& X1) X0)))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((v1_relat_1 \\
& (k1_scmfsa_m X0)) \wedge ((v4_relat_1 (k1_scmfsa_m X0) (u1_struct_0 \\
& k1_scmfsa_2)) \wedge ((v1_funct_1 (k1_scmfsa_m X0)) \wedge ((v5_funct_1 \\
& (k1_scmfsa_m X0) (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge (v1_partfun1 \\
& (k1_scmfsa_m X0) (u1_struct_0 k1_scmfsa_2))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 \\
& k1_scmf_sa_2))) \wedge ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 k5_numbers) \wedge \\
& ((v5_relat_1 X1 (u1_compos_1 k1_scmf_sa_2)) \wedge ((\neg v1_xboole_0 X1) \wedge \\
& ((v1_funct_1 X1) \wedge ((v1_finset_1 X1) \wedge (v1_afinsq_1 X1)))))) \Rightarrow \\
& ((v1_relat_1 (k2_scmf_sa_9 X0 X1)) \wedge ((v4_relat_1 (k2_scmf_sa_9 \\
& X0 X1) k5_numbers) \wedge ((v5_relat_1 (k2_scmf_sa_9 X0 X1) (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((\neg v1_xboole_0 (k2_scmf_sa_9 X0 X1)) \wedge ((v1_funct_1 \\
& (k2_scmf_sa_9 X0 X1)) \wedge ((v1_finset_1 (k2_scmf_sa_9 X0 X1)) \wedge (v1_afinsq_1 \\
& (k2_scmf_sa_9 X0 X1)))))))))
\end{aligned} \tag{6}$$

Theorem 1

$$\begin{aligned}
& \forall X0. ((v1_relat_1 X0) \wedge ((v4_relat_1 X0 k5_numbers) \wedge ((v5_relat_1 \\
& X0 (u1_compos_1 k1_scmf_sa_2)) \wedge ((v1_funct_1 X0) \wedge (v1_partfun1 \\
& X0 k5_numbers)))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 \\
& X1 (u1_struct_0 k1_scmf_sa_2)) \wedge ((v1_funct_1 X1) \wedge ((v5_funct_1 \\
& X1 (k2_memstr_0 np_3 k1_scmf_sa_2)) \wedge (v1_partfun1 X1 (u1_struct_0 \\
& k1_scmf_sa_2)))))) \Rightarrow (\forall X2. ((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmf_sa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow (\forall X3. ((v1_ami_2 X3) \wedge ((\neg v1_scmf_sa_m X3) \wedge (m1_subset_1 \\
& X3 (u1_struct_0 k1_scmf_sa_2)))) \Rightarrow ((r1_xreal_0 (k1_funct_1 X1 \\
& X3) k6_numbers) \Rightarrow ((r2_scm_halt (k2_scmf_sa_9 X3 X2) X1 X0) \wedge (r1_scm_halt \\
& (k2_scmf_sa_9 X3 X2) X1 X0))))))
\end{aligned}$$