

t27_scmfsa8a (TMHLM- Cjt3tFpxrzkEqTAzBWbunaMjTzAcEN)

October 27, 2020

Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_scmfsa_2 : \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ 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 $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $v1_afinsq_1 : \iota \Rightarrow o$ be given. Let $r5_scmfsa7b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_scmfsa_m : \iota \Rightarrow \iota$ be given. Let $r6_scmfsa7b : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_extpro_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_scmfsa_2 : \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $np_1 : \iota$ be given. Let $k5_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_extpro_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_scmfsa6a : \iota \Rightarrow \iota$ be given. Let $k3_scmfsa6a : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_extpro_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_nat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_card_1 : \iota \Rightarrow \iota$ be given. Let $v5_memstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
 & ((v1_funct_1 X0) \wedge (v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)))))) \Rightarrow \\
 & ((k1_funct_1 (k1_scmfsa_m X0) (k4_scmfsa_2 k6_numbers) = np_1) \wedge \\
 & (k1_funct_1 (k1_scmfsa_m X0) (k4_struct_0 k1_scmfsa_2) = k6_numbers)) \\
 & \tag{1}
 \end{aligned}$$

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_relat_1 X1) \wedge ((v4_relat_1 X1 k5_numbers) \wedge ((v5_relat_1 X1 \\
& (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 \\
& k5_numbers)))))) \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 (\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_scmfsa_2)) \wedge \\
& ((v1_funct_1 X3) \wedge ((v1_finset_1 X3) \wedge (v1_afinsq_1 X3)))))) \Rightarrow \\
& ((r5_scmfsa7b X2 X0 X1) \wedge (r6_scmfsa7b X2 X0 X1)) \Rightarrow ((\forall X4. \\
& (m2_subset_1 X4 k1_numbers k5_numbers) \Rightarrow ((r1_xxreal_0 X4 (k8_extpro_1 \\
& np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0))) \Rightarrow ((k5_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k2_scmfsa6a X2)) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0) X4) = k5_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0) X4)) \wedge (k3_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a \\
& X2)) (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a \\
& X2)) (k8_memstr_0 np_3 k1_scmfsa_2 X0) X4) = k3_extpro_1 np_3 \\
& k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k5_extpro_1 np_3 \\
& k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k8_memstr_0 np_3 \\
& k1_scmfsa_2 X0) X4)))) \wedge ((k6_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 \\
& np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a X2)) (k8_memstr_0 \\
& np_3 k1_scmfsa_2 X0) (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 X0)) np_1)) = \\
& k6_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0) (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) \\
& (k8_memstr_0 np_3 k1_scmfsa_2 X0)) np_1))) \wedge (k5_memstr_0 np_3 \\
& k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a \\
& X2)) (k8_memstr_0 np_3 k1_scmfsa_2 X0) (k2_nat_1 (k8_extpro_1 \\
& np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0)) np_1)) = k5_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 \\
& k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k8_memstr_0 np_3 \\
& k1_scmfsa_2 X0) (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 \\
& X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 X0)) np_1)))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow (\forall X1. \\
& ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 k5_numbers) \wedge ((v5_relat_1 X1 \\
& (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 \\
& k5_numbers)))))) \Rightarrow (\forall X2.((\neg v1_xboole_0 X2) \wedge ((v1_relat_1 \\
& X2) \wedge ((v4_relat_1 X2 k5_numbers) \wedge ((v5_relat_1 X2 (u1_compos_1 \\
& k1_scmfsa_2)) \wedge ((v1_funct_1 X2) \wedge ((v1_finset_1 X2) \wedge (v1_afinsq_1 \\
& X2)))))) \Rightarrow (((r5_scmfsa7b X2 X0 X1) \wedge (r6_scmfsa7b X2 X0 X1)) \Rightarrow ((\\
& k5_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k2_scmfsa6a X2)) (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0) (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) \\
& (k8_memstr_0 np_3 k1_scmfsa_2 X0)) np_1)) = k5_card_1 X2) \wedge (k6_memstr_0 \\
& np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 \\
& X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 X0) (k8_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 X2) (k8_memstr_0 np_3 k1_scmfsa_2 X0))) = k6_memstr_0 \\
& np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 \\
& X1 (k2_scmfsa6a X2)) (k8_memstr_0 np_3 k1_scmfsa_2 X0) (k2_nat_1 \\
& (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) (k8_memstr_0 \\
& np_3 k1_scmfsa_2 X0)) np_1))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((k1_funct_1 \\
& X0 (k4_scmfsa_2 k6_numbers) = np_1) \Rightarrow (k8_memstr_0 np_3 k1_scmfsa_2 \\
& X0 = k1_scmfsa_m X0))
\end{aligned} \tag{4}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge ((v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v1_partfun1 X0 (u1_struct_0 k1_scmfsa_2)))))) \Rightarrow ((v1_relat_1 \\
& (k1_scmfsa_m X0)) \wedge ((v4_relat_1 (k1_scmfsa_m X0) (u1_struct_0 \\
& k1_scmfsa_2)) \wedge ((v1_funct_1 (k1_scmfsa_m X0)) \wedge ((v5_funct_1 \\
& (k1_scmfsa_m X0) (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge (v1_partfun1 \\
& (k1_scmfsa_m X0) (u1_struct_0 k1_scmfsa_2))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge (v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)))))) \Rightarrow \\
& ((v1_relat_1 (k1_scmfsa_m X0)) \wedge ((v4_relat_1 (k1_scmfsa_m X0) \\
& (u1_struct_0 k1_scmfsa_2)) \wedge ((v1_funct_1 (k1_scmfsa_m X0)) \wedge \\
& ((v5_funct_1 (k1_scmfsa_m X0) (k2_memstr_0 np_3 k1_scmfsa_2)) \wedge \\
& (v5_memstr_0 (k1_scmfsa_m X0) np_3 k1_scmfsa_2 k6_numbers))))))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1_relat_1 X0) \wedge ((v4_relat_1 X0 (u1_struct_0 k1_scmfsa_2)) \wedge \\
& ((v1_funct_1 X0) \wedge (v5_funct_1 X0 (k2_memstr_0 np_3 k1_scmfsa_2)))))) \Rightarrow \\
& (k1_scmfsa_m X0 = k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 \\
& (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1)))
\end{aligned} \tag{8}$$

Theorem 1

$$\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_relat_1 X1) \wedge ((v4_relat_1 X1 k5_numbers) \wedge ((v5_relat_1 X1 \\
& (u1_compos_1 k1_scmfsa_2)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 \\
& k5_numbers)))))) \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 (\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_scmfsa_2)) \wedge \\
& ((v1_funct_1 X3) \wedge ((v1_finset_1 X3) \wedge (v1_afinsq_1 X3)))))) \Rightarrow \\
& (((r5_scmfsa7b X2 (k1_scmfsa_m X0) X1) \wedge (r6_scmfsa7b X2 (k1_scmfsa_m \\
& X0) X1)) \Rightarrow ((\forall X4. (m2_subset_1 X4 k1_numbers k5_numbers) \Rightarrow \\
& ((r1_xxreal_0 X4 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 \\
& X2) (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 \\
& (k4_scmfsa_2 k6_numbers) np_1)))))) \Rightarrow ((k5_memstr_0 np_3 k1_scmfsa_2 \\
& (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a X2)) \\
& (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 (\\
& k4_scmfsa_2 k6_numbers) np_1))) X4) = k5_memstr_0 np_3 k1_scmfsa_2 \\
& (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a X2 \\
& X3)) (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 \\
& (k4_scmfsa_2 k6_numbers) np_1))) X4) \wedge (k3_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k2_scmfsa6a X2)) (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k2_scmfsa6a X2)) (k1_funct_4 X0 (k8_memstr_0 np_3 \\
& k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1))) \\
& X4) = k3_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a \\
& X2 X3)) (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k3_scmfsa6a \\
& X2 X3)) (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 \\
& (k4_scmfsa_2 k6_numbers) np_1))) X4)))) \wedge ((k6_memstr_0 np_3 \\
& k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a \\
& X2)) (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 \\
& (k4_scmfsa_2 k6_numbers) np_1))) (k2_nat_1 (k8_extpro_1 np_3 \\
& k1_scmfsa_2 (k1_funct_4 X1 X2) (k1_funct_4 X0 (k8_memstr_0 np_3 \\
& k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1)))) \\
& np_1)) = k6_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k1_funct_4 X0 (k8_memstr_0 \\
& np_3 k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1))) \\
& (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) (k1_funct_4 \\
& X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 \\
& k6_numbers) np_1)))) np_1))) \wedge (k5_memstr_0 np_3 k1_scmfsa_2 \\
& (k5_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 (k2_scmfsa6a X2)) \\
& (k1_funct_4 X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 (\\
& k4_scmfsa_2 k6_numbers) np_1))) (k2_nat_1 (k8_extpro_1 np_3 \\
& k1_scmfsa_2 (k1_funct_4 X1 X2) (k1_funct_4 X0 (k8_memstr_0 np_3 \\
& k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1)))) \\
& np_1)) = k5_memstr_0 np_3 k1_scmfsa_2 (k5_extpro_1 np_3 k1_scmfsa_2 \\
& (k1_funct_4 X1 (k3_scmfsa6a X2 X3)) (k1_funct_4 X0 (k8_memstr_0 \\
& np_3 k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 k6_numbers) np_1))) \\
& (k2_nat_1 (k8_extpro_1 np_3 k1_scmfsa_2 (k1_funct_4 X1 X2) (k1_funct_4 \\
& X0 (k8_memstr_0 np_3 k1_scmfsa_2 (k16_funcop_1 (k4_scmfsa_2 \\
& k6_numbers) np_1)))) np_1))))))
\end{aligned}$$