

t28_msafree3

(TMG52UEjNKvBtyyDyZrKdDMUySd8kpfFuj2Q)

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Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v1_instalg1 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_dtconstr : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_msafree : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_trees_3 : \iota \Rightarrow \iota$ be given. Let $k1_msaterm : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_msafree3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_msafree3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v11_struct_0 X0) \wedge ((v1_instalg1 X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 (u1_struct_0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X2. (m1_dtconstr X2 (u1_struct_0 (k5_msafree \\ & X0 X1)) (k5_trees_3 (u1_struct_0 (k5_msafree X0 X1))) (k1_msaterm \\ & X0 X1)) \Rightarrow (r2_pboole (u1_struct_0 X0) (k2_msafree3 X0 X2) X1))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v11_struct_0 X0) \wedge ((v1_instalg1 X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 (u1_struct_0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X2. (m1_dtconstr X2 (u1_struct_0 (k5_msafree \\ & X0 X1)) (k5_trees_3 (u1_struct_0 (k5_msafree X0 X1))) (k1_msaterm \\ & X0 X1)) \Rightarrow (k4_msafree3 X0 X1 X2 = k2_msafree3 X0 X2))) \end{aligned} \quad (2)$$

Theorem 1

$$\begin{aligned} & \forall X0. ((\neg v11_struct_0 X0) \wedge ((v1_instalg1 X0) \wedge (l1_msualg_1 \\ & X0))) \Rightarrow (\forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 (u1_struct_0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (u1_struct_0 \\ & X0)))))) \Rightarrow (\forall X2. (m1_dtconstr X2 (u1_struct_0 (k5_msafree \\ & X0 X1)) (k5_trees_3 (u1_struct_0 (k5_msafree X0 X1))) (k1_msaterm \\ & X0 X1)) \Rightarrow (r2_pboole (u1_struct_0 X0) (k4_msafree3 X0 X1 X2) X1))) \end{aligned}$$