

t12_hilbasis (TMag- BBPih4QLPqJVjTTJ9tGGhS9a48MkAUf)

October 27, 2020

Let $v7_struct_0 : \iota \Rightarrow o$ be given. Let $v1_group_1 : \iota \Rightarrow o$ be given. Let $l6_algstr_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_polynom1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_hilbasis : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_hilbasis : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_group_1 : \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_valued_0 : \iota \Rightarrow o$ be given. Let $v2_pre_poly : \iota \Rightarrow o$ be given. Let $k4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funct_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l2_struct_0 : \iota \Rightarrow o$ be given. Let $k7_polynom1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ be given. Let $k8_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k15_pre_poly : \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_pre_poly : \iota \Rightarrow \iota$ be given. Let $k15_funct_7 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_polynom1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l2_algstr_0 : \iota \Rightarrow o$ be given. Let $l5_algstr_0 : \iota \Rightarrow o$ be given. Let $l4_algstr_0 : \iota \Rightarrow o$ be given. Let $l4_struct_0 : \iota \Rightarrow o$ be given. Let $l3_struct_0 : \iota \Rightarrow o$ be given. Let $l3_algstr_0 : \iota \Rightarrow o$ be given. Let $v4_funct_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & \forall X3. (X2 \neq X3) \Rightarrow (k1_funct_1 (k2_funct_7 X0 X2 X1) X3 = k1_funct_1 \\ & \quad X0 X3)) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & (X2 \in k9_xtuple_0 X0) \Rightarrow (k1_funct_1 (k2_funct_7 X0 X2 X1) X2 = X1)) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee \\ & \quad (X0 \in X1)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v2_struct_0 X1)\wedge(l2_struct_0 X1))\Rightarrow \\ & (\forall X2.((v1_relat_1 X2)\wedge((v4_relat_1 X2 X0)\wedge((v1_funct_1 \\ & X2)\wedge((v1_partfun1 X2 X0)\wedge((v4_valued_0 X2)\wedge(v2_pre_poly X2))))))\Rightarrow \\ & (k3_polynom1 X0 X1 (k7_polynom1 X0 X1) X2 = k4_struct_0 X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.(k9_xtuple_0 (k2_funcop_1 X0 X1) = X0)\wedge(r1_tarski (k10_xtuple_0 (k2_funcop_1 X0 X1)) (k1_tarski X1)) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X0)\wedge(m1_subset_1 X2 X0))\Rightarrow(k8_funcop_1 X0 X1 X2 = k2_funcop_1 X1 X2) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X1)\wedge(l1_struct_0 X1))\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k15_pre_poly \\ & X0) (u1_struct_0 X1))\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k15_pre_poly X0) (u1_struct_0 X1))))))\wedge((v1_relat_1 X3)\wedge((\\ & v4_relat_1 X3 X0)\wedge((v1_funct_1 X3)\wedge((v1_partfun1 X3 X0)\wedge((v4_valued_0 \\ & X3)\wedge(v2_pre_poly X3))))))\Rightarrow(k3_polynom1 X0 X1 X2 X3 = k1_funct_1 \\ & X2 X3)) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.k15_pre_poly X0 = k14_pre_poly X0 \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((v1_funct_1 \\ & X2)\wedge((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1))))\wedge(m1_subset_1 X4 X1))\Rightarrow(k15_funct_7 X0 X1 X2 X3 X4 = k2_funct_7 \\ & X2 X3 X4)) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v2_struct_0 X1)\wedge(l2_struct_0 X1))\Rightarrow \\ & (\exists X2.(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k15_pre_poly \\ & X0) (u1_struct_0 X1))))\wedge((v1_relat_1 X2)\wedge((v4_relat_1 X2 (k15_pre_poly \\ & X0))\wedge((v5_relat_1 X2 (u1_struct_0 X1))\wedge((v1_funct_1 X2)\wedge((\neg \\ & v1_xboole_0 X2)\wedge((v1_partfun1 X2 (k15_pre_poly X0))\wedge((v1_funct_2 \\ & X2 (k15_pre_poly X0) (u1_struct_0 X1))\wedge(v1_polynom1 X2 (k15_pre_poly \\ & X0) X1)))))))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0. \neg v1_xboole_0 (k14_pre_poly X0) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge \\ (m1_subset_1 X1 (k1_zfmisc_1 X0)))) \Rightarrow (\forall X2. (m2_subset_1 \\ X2 X0 X1) \Rightarrow (m1_subset_1 X2 X0)) \end{aligned} \quad (12)$$

Assume the following.

$$\forall X0. (l6_algstr_0 X0) \Rightarrow ((l2_algstr_0 X0) \wedge (l5_algstr_0 X0)) \quad (13)$$

Assume the following.

$$\forall X0. (l5_algstr_0 X0) \Rightarrow ((l4_algstr_0 X0) \wedge (l4_struct_0 X0)) \quad (14)$$

Assume the following.

$$\forall X0. (l4_struct_0 X0) \Rightarrow ((l2_struct_0 X0) \wedge (l3_struct_0 X0)) \quad (15)$$

Assume the following.

$$\forall X0. (l4_algstr_0 X0) \Rightarrow ((l3_struct_0 X0) \wedge (l3_algstr_0 X0)) \quad (16)$$

Assume the following.

$$\forall X0. (l2_struct_0 X0) \Rightarrow (l1_struct_0 X0) \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((\neg v2_struct_0 X1) \wedge (l2_struct_0 X1)) \Rightarrow \\ ((v1_funct_1 (k7_polynom1 X0 X1)) \wedge ((v1_funct_2 (k7_polynom1 \\ X0 X1) (k15_pre_poly X0) (u1_struct_0 X1)) \wedge (m1_subset_1 (k7_polynom1 \\ X0 X1) (k1_zfmisc_1 (k2_zfmisc_1 (k15_pre_poly X0) (u1_struct_0 \\ X1)))))) \end{aligned} \quad (18)$$

Assume the following.

$$\forall X0. (l2_struct_0 X0) \Rightarrow (m1_subset_1 (k4_struct_0 X0) (u1_struct_0 X0)) \quad (19)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. ((m1_subset_1 X1 X0) \wedge ((\neg v2_struct_0 \\ X2) \wedge ((v1_group_1 X2) \wedge (l5_algstr_0 X2)))) \Rightarrow ((v1_funct_1 (k3_hilbasis \\ X0 X1 X2)) \wedge ((v1_funct_2 (k3_hilbasis X0 X1 X2) (k15_pre_poly X0) \\ (u1_struct_0 X2)) \wedge (m1_subset_1 (k3_hilbasis X0 X1 X2) (k1_zfmisc_1 \\ (k2_zfmisc_1 (k15_pre_poly X0) (u1_struct_0 X2)))))) \end{aligned} \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X1 X0)\Rightarrow(m2_subset_1 (k2_hilbasis X0 X1) (k14_pre_poly X0) (k15_pre_poly X0)) \quad (21)$$

Assume the following.

$$\forall X0.(l3_algstr_0 X0)\Rightarrow(m1_subset_1 (k1_group_1 X0) (u1_struct_0 X0)) \quad (22)$$

Assume the following.

$$\forall X0.m1_subset_1 (k15_pre_poly X0) (k1_zfmisc_1 (k14_pre_poly X0)) \quad (23)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v2_struct_0 X1)\wedge(l2_struct_0 X1))\Rightarrow(k7_polynom1 X0 X1 = k8_funcop_1 (u1_struct_0 X1) (k15_pre_poly X0) (k4_struct_0 X1)) \quad (24)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X1 X0)\Rightarrow(\forall X2.((\neg v2_struct_0 X2)\wedge((v1_group_1 X2)\wedge(l5_algstr_0 X2)))\Rightarrow(k3_hilbasis X0 X1 X2 = k15_funct_7 (k15_pre_poly X0) (u1_struct_0 X2) (k7_polynom1 X0 X2) (k2_hilbasis X0 X1) (k1_group_1 X2))) \quad (25)$$

Assume the following.

$$\forall X0.\forall X1.k2_funcop_1 X0 X1 = k2_zfmisc_1 X0 (k1_tarski X1) \quad (26)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (k15_pre_poly X0)))\Rightarrow(v4_funct_1 X1) \quad (27)$$

Assume the following.

$$\forall X0.(v1_xboole_0 X0)\Rightarrow(\forall X1.((v1_relat_1 X1)\wedge(v5_relat_1 X1 X0))\Rightarrow((v1_xboole_0 X1)\wedge((v1_relat_1 X1)\wedge(v5_relat_1 X1 X0)))) \quad (28)$$

Assume the following.

$$\forall X0.(v4_funct_1 X0)\Rightarrow(\forall X1.(m1_subset_1 X1 X0)\Rightarrow((v1_relat_1 X1)\wedge(v1_funct_1 X1))) \quad (29)$$

Assume the following.

$$\forall X0.(l1_struct_0 X0)\Rightarrow((v2_struct_0 X0)\Rightarrow(v7_struct_0 X0)) \quad (30)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))\Rightarrow(v1_relat_1 X2) \quad (31)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0 X1)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k15_pre_poly X0))))\Rightarrow(\forall X2.(m1_subset_1 X2 X1)\Rightarrow((v1_partfun1 X2 X0)\wedge((v4_valued_0 X2)\wedge(v2_pre_poly X2)))) \quad (32)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (k15_pre_poly X0)))\Rightarrow(\forall X2.(m1_subset_1 X2 X1)\Rightarrow(v4_relat_1 X2 X0)) \quad (33)$$

Theorem 1

$$\begin{aligned} & \forall X0.\forall X1.((\neg v7_struct_0 X1)\wedge((v1_group_1 X1)\wedge \\ & l6_algstr_0 X1)))\Rightarrow(\forall X2.(m1_subset_1 X2 X0)\Rightarrow((k3_polynom1 \\ & X0 X1 (k3_hilbasis X0 X2 X1) (k2_hilbasis X0 X2) = k1_group_1 X1)\wedge \\ & (\forall X3.((v1_relat_1 X3)\wedge((v4_relat_1 X3 X0)\wedge((v1_funct_1 \\ & X3)\wedge((v1_partfun1 X3 X0)\wedge((v4_valued_0 X3)\wedge(v2_pre_poly X3))))))\Rightarrow \\ & ((X3\neq k2_hilbasis X0 X2)\Rightarrow(k3_polynom1 X0 X1 (k3_hilbasis X0 X2 X1) \\ & X3 = k4_struct_0 X1)))) \end{aligned}$$