

t16_binarith (TMTzi-
HGgZ5x52kQ8wK83SCbMVe8ScXgV9K)

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Let $v3_card_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $np_1 : \iota$ be given. Let $m2_finseq_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_margrel1 : \iota$ be given. Let $k12_finseq_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_margrel1 : \iota$ be given. Let $k6_binarith : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_xboole_0 : \iota$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $v1_xcmplx_0 : \iota \Rightarrow o$ be given. Let $k6_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_numbers : \iota$ be given. Let $v1_xreal_0 : \iota \Rightarrow o$ be given. Let $k3_power : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_ordinal1 : \iota$ be given. Let $k2_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_finsop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_xcmplx_0 : \iota \Rightarrow \iota$ be given. Let $v2_xxreal_0 : \iota \Rightarrow o$ be given. Let $np_2 : \iota$ be given. Let $m2_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k5_numbers : \iota$ be given. Let $np_0 : \iota$ be given. Let $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_finseq_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_xboolean : \iota$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $k7_nat_d : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_xreal_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_margrel1 : \iota$ be given. Let $k1_xboolean : \iota$ be given. Let $k5_series_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_finseq_1 : \iota \Rightarrow \iota$ be given. Let $k1_finseq_1 : \iota \Rightarrow \iota$ be given. Let $k15_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k14_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_finseq_1 : \iota \Rightarrow \iota$ be given. Let $v3_ordinal1 : \iota \Rightarrow o$ be given. Let $v1_int_1 : \iota \Rightarrow o$ be given. Let $k47_binop_2 : \iota$ be given. Let $v1_setwiseo : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_binarith : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_tarski : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v3_card_1 X1 np_1) \wedge \\ & (m2_finseq_1 X1 X0)) \Rightarrow (\exists X2. (m1_subset_1 X2 X0) \wedge (X1 = k12_finseq_1 \\ & \quad X0 X2))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. (v1_xboole_0 X0) \Rightarrow (X0 = k1_xboole_0) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((X0 \in X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 X2))) \Rightarrow (m1_subset_1 X0 X2) \quad (3)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k6_xcmplx_0 X0 \ k6_numbers = X0) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.(m1_subset_1 X0 X1) \Rightarrow ((v1_xboole_0 X1) \vee (X0 \in X1)) \quad (5)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0) \Rightarrow (k3_power X0 \ k6_numbers = np_1) \quad (6)$$

Assume the following.

$$m1_subset_1 k1_xboole_0 k4_ordinal1 \quad (7)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k2_xcmplx_0 X0 \ k6_numbers = X0) \quad (8)$$

Assume the following.

$$\forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 X0) \Rightarrow (k7_partfun1 X0 (k12_finseq_1 X0 X1) \ np_1 = X1)) \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 X0) \Rightarrow \\ (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 \\ X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ X0 X0) X0)))))) \Rightarrow (k1_finsop_1 X0 (k12_finseq_1 X0 X1) X2 = X1))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.((v1_xcmplx_0 X0) \wedge (v1_xcmplx_0 X1)) \Rightarrow (k6_xcmplx_0 (k4_xcmplx_0 X0) (k4_xcmplx_0 X1) = k6_xcmplx_0 X1 X0) \quad (11)$$

Assume the following.

$$\forall X0.\forall X1.((v1_xcmplx_0 X0) \wedge (v1_xcmplx_0 X1)) \Rightarrow (k2_xcmplx_0 (k4_xcmplx_0 X0) (k4_xcmplx_0 X1) = k4_xcmplx_0 (k2_xcmplx_0 X0 X1)) \quad (12)$$

Assume the following.

$$\begin{aligned} & ((v2_xreal_0 \ np_2) \wedge (m2_subset_1 \ np_2 \ k1_numbers \ k5_numbers)) \wedge \\ & ((m1_subset_1 \ np_2 \ k5_numbers) \wedge (m1_subset_1 \ np_2 \ k1_numbers)) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & ((v2_xreal_0 \ np_1) \wedge (m2_subset_1 \ np_1 \ k1_numbers \ k5_numbers)) \wedge \\ & ((m1_subset_1 \ np_1 \ k5_numbers) \wedge (m1_subset_1 \ np_1 \ k1_numbers)) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_xcmplx_0 \ X0) \wedge (v1_xcmplx_0 \ X1)) \Rightarrow (\\ & k2_xcmplx_0 \ X0 \ (k4_xcmplx_0 \ X1) = k6_xcmplx_0 \ X0 \ X1) \end{aligned} \quad (15)$$

Assume the following.

$$v1_xboole_0 \ np_0 \quad (16)$$

Assume the following.

$$k4_xcmplx_0 \ (k4_xcmplx_0 \ np_2) = np_2 \quad (17)$$

Assume the following.

$$k4_xcmplx_0 \ np_0 = np_0 \quad (18)$$

Assume the following.

$$k6_xcmplx_0 \ (k4_xcmplx_0 \ np_1) \ np_1 = k4_xcmplx_0 \ np_2 \quad (19)$$

Assume the following.

$$k6_xcmplx_0 \ np_2 \ np_2 = np_0 \quad (20)$$

Assume the following.

$$k6_xcmplx_0 \ np_1 \ np_1 = np_0 \quad (21)$$

Assume the following.

$$r1_xreal_0 \ np_1 \ np_1 \quad (22)$$

Assume the following.

$$r1_xreal_0 \ np_0 \ np_0 \quad (23)$$

Assume the following.

$$\forall X0. \forall X1. (m2_finseq_1 \ X1 \ X0) \Leftrightarrow (m1_finseq_1 \ X1 \ X0) \quad (24)$$

Assume the following.

$$k8_margrel1 = k2_xboolean \quad (25)$$

Assume the following.

$$\forall X0.\forall X1.((v7_ordinal1\ X0)\wedge(v7_ordinal1\ X1))\Rightarrow(k7_nat_d\ X0\ X1 = k1_xreal_0\ X0\ X1) \quad (26)$$

Assume the following.

$$k7_margrel1 = k1_xboolean \quad (27)$$

Assume the following.

$$k6_numbers = k1_xboole_0 \quad (28)$$

Assume the following.

$$\forall X0.\forall X1.((v7_ordinal1\ X0)\wedge(v7_ordinal1\ X1))\Rightarrow(k5_series_1\ X0\ X1 = k3_power\ X0\ X1) \quad (29)$$

Assume the following.

$$k5_numbers = k4_ordinal1 \quad (30)$$

Assume the following.

$$\forall X0.(v7_ordinal1\ X0)\Rightarrow(k2_finseq_1\ X0 = k1_finseq_1\ X0) \quad (31)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((m1_subset_1\ X3\ X0)\wedge(m1_subset_1\ X4\ X0))\Rightarrow(k15_funcop_1\ X0\ X1\ X2\ X3\ X4 = k14_funcop_1\ X1\ X2\ X3\ X4) \quad (32)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1_xboole_0\ X0)\wedge(m1_subset_1\ X1\ X0))\Rightarrow(k12_finseq_1\ X0\ X1 = k5_finseq_1\ X1) \quad (33)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0\ X0)\Rightarrow(k4_xcmplx_0\ (k4_xcmplx_0\ X0) = X0) \quad (34)$$

Assume the following.

$$\forall X0.\forall X1.((v1_xreal_0\ X0)\wedge(v1_xreal_0\ X1))\Rightarrow(v1_xreal_0\ (k6_xcmplx_0\ X0\ X1)) \quad (35)$$

Assume the following.

$$(\neg v1_xboole_0\ k4_ordinal1)\wedge(v3_ordinal1\ k4_ordinal1) \quad (36)$$

Assume the following.

$$\forall X0.\forall X1.((v1_int_1 X0)\wedge(v1_int_1 X1))\Rightarrow(v1_int_1 (k6_xcmplx_0 X0 X1)) \quad (37)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0)\Rightarrow((v1_xcmplx_0 (k4_xcmplx_0 X0))\wedge(v1_xreal_0 (k4_xcmplx_0 X0))) \quad (38)$$

Assume the following.

$$\forall X0.(v1_int_1 X0)\Rightarrow((v1_xcmplx_0 (k4_xcmplx_0 X0))\wedge(v1_int_1 (k4_xcmplx_0 X0))) \quad (39)$$

Assume the following.

$$\neg v1_xboole_0 k6_margrel1 \quad (40)$$

Assume the following.

$$v1_xboole_0 k1_xboole_0 \quad (41)$$

Assume the following.

$$(v1_funct_1 k47_binop_2)\wedge((v1_funct_2 k47_binop_2 (k2_zfmisc_1 k5_numbers k5_numbers) k5_numbers)\wedge(v1_setwiseo k47_binop_2 k5_numbers)) \quad (42)$$

Assume the following.

$$m1_subset_1 k8_margrel1 k6_margrel1 \quad (43)$$

Assume the following.

$$m1_subset_1 k5_numbers (k1_zfmisc_1 k1_numbers) \quad (44)$$

Assume the following.

$$\forall X0.\forall X1.((v7_ordinal1 X0)\wedge((v3_card_1 X1 X0)\wedge(m1_finseq_1 X1 k6_margrel1)))\Rightarrow((v3_card_1 (k5_binarith X0 X1) X0)\wedge(m2_finseq_1 (k5_binarith X0 X1) k5_numbers)) \quad (45)$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0)\Rightarrow(v1_xcmplx_0 (k4_xcmplx_0 X0)) \quad (46)$$

Assume the following.

$$(v1_funct_1 k47_binop_2)\wedge((v1_funct_2 k47_binop_2 (k2_zfmisc_1 k5_numbers k5_numbers) k5_numbers)\wedge(m1_subset_1 k47_binop_2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 k5_numbers k5_numbers) k5_numbers)))) \quad (47)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((X0 = X1)\Rightarrow(k14_funcop_1 X0 X1 X2 X3 = X2))\wedge((X0\neq X1)\Rightarrow(k14_funcop_1 X0 X1 X2 X3 = X3)) \quad (48)$$

Assume the following.

$$\forall X0.\forall X1.k4_tarski X0 X1 = k2_tarski (k2_tarski X0 X1) (k1_tarski X0) \quad (49)$$

Assume the following.

$$\forall X0.k5_finseq_1 X0 = k1_tarski (k4_tarski np_1 X0) \quad (50)$$

Assume the following.

$$\forall X0.(v7_ordinal1 X0)\Rightarrow(\forall X1.((v3_card_1 X1 X0)\wedge(m2_finseq_1 X1 k6_margrel1))\Rightarrow(k6_binarith X0 X1 = k1_finsop_1 k5_numbers (k5_binarith X0 X1) k47_binop_2)) \quad (51)$$

Assume the following.

$$\forall X0.(v7_ordinal1 X0)\Rightarrow(\forall X1.((v3_card_1 X1 X0)\wedge(m2_finseq_1 X1 k6_margrel1))\Rightarrow(\forall X2.((v3_card_1 X2 X0)\wedge(m2_finseq_1 X2 k5_numbers))\Rightarrow((X2 = k5_binarith X0 X1)\Leftrightarrow(\forall X3.(v7_ordinal1 X3)\Rightarrow((X3 \in k2_finseq_1 X0)\Rightarrow(k7_partfun1 k5_numbers X2 X3 = k15_funcop_1 k5_numbers (k7_partfun1 k6_margrel1 X1 X3) k7_margrel1 k6_numbers (k5_series_1 np_2 (k7_nat_d X3 np_1)))))))) \quad (52)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0)\Rightarrow(\forall X1.(v1_xreal_0 X1)\Rightarrow(((r1_xxreal_0 k6_numbers (k6_xcmplx_0 X0 X1))\Rightarrow(k1_xreal_0 X0 X1 = k6_xcmplx_0 X0 X1))\wedge((\neg r1_xxreal_0 k6_numbers (k6_xcmplx_0 X0 X1))\Rightarrow(k1_xreal_0 X0 X1 = k6_numbers)))) \quad (53)$$

Assume the following.

$$k2_xboolean = np_1 \quad (54)$$

Assume the following.

$$k1_xboolean = k6_numbers \quad (55)$$

Assume the following.

$$\forall X0.(v7_ordinal1 X0)\Rightarrow(k1_finseq_1 X0 = ReplSep (toset (\lambda X1 : \iota.m2_subset_1 X1 k1_numbers k5_numbers)) (\lambda X1 : \iota.(r1_xxreal_0 np_1 X1)\wedge(r1_xxreal_0 X1 X0)) (\lambda X1 : \iota.X1)) \quad (56)$$

Assume the following.

$$\forall X0.\forall X1.((v1_xcmplx_0 X0)\wedge(v1_xcmplx_0 X1))\Rightarrow(k2_xcmplx_0 X0 X1 = k2_xcmplx_0 X1 X0) \quad (57)$$

Assume the following.

$$\forall X0.\forall X1.k2_tarSKI X0 X1 = k2_tarSKI X1 X0 \quad (58)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k4_ordinal1)\Rightarrow(v7_ordinal1 X0) \quad (59)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0)\Rightarrow(v1_xcmplx_0 X0) \quad (60)$$

Assume the following.

$$\forall X0.(v7_ordinal1 X0)\Rightarrow(v1_xreal_0 X0) \quad (61)$$

Assume the following.

$$\forall X0.(v7_ordinal1 X0)\Rightarrow(v1_int_1 X0) \quad (62)$$

Assume the following.

$$\forall X0.(m1_subset_1 X0 k1_numbers)\Rightarrow(v1_xreal_0 X0) \quad (63)$$

Theorem 1

$$\forall X0.((v3_card_1 X0 np_1)\wedge(m2_finseq_1 X0 k6_margrel1))\Rightarrow((X0 = k12_finseq_1 k6_margrel1 k8_margrel1)\Rightarrow(k6_binarith np_1 X0 = np_1))$$