

t47\_nat\_d (TMTiXSi-  
ZLma3hgA84ibatkCpQuYwLX9WE3P)

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Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $r1\_xreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k7\_nat\_d : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k6\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $np\_0 : \iota$  be given. Let  $k1\_xreal\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Let  $v3\_xreal\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\neg (r1\_xreal\_0 X0 (k1\_nat\_1 X1 np\_1)) \wedge ((\neg r1\_xreal\_0 X0 X1) \wedge (X0 \neq k1\_nat\_1 X1 np\_1)))) \quad (1)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (\forall X2.(v1\_xreal\_0 X2) \Rightarrow ((r1\_xreal\_0 X0 X1) \Leftrightarrow (r1\_xreal\_0 (k2\_xcmplx\_0 X0 X2) (k2\_xcmplx\_0 X1 X2)))))) \quad (2)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (3)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((r1\_xreal\_0 (k1\_nat\_1 X0 np\_1) X1) \Rightarrow ((\neg r1\_xreal\_0 X1 (k7\_nat\_d X0 np\_1)) \wedge ((\neg r1\_xreal\_0 X1 (k7\_nat\_d X0 np\_2)) \wedge (r1\_xreal\_0 X0 X1)))))) \quad (4)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (k7\_nat\_d X0 np\_2 = k7\_nat\_d (k7\_nat\_d X0 np\_1) np\_1) \quad (5)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow((r1\_xxreal\_0\ X0\ X1)\Rightarrow(r1\_xxreal\_0\ (k7\_nat\_d\ X0\ np\_1)\ X1))) \quad (6)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(((r1\_xxreal\_0\ np\_1\ (k7\_nat\_d\ X0\ X1))\vee(r1\_xxreal\_0\ np\_1\ (k6\_xcmplx\_0\ X0\ X1)))\Rightarrow(k2\_nat\_1\ (k7\_nat\_d\ X0\ X1)\ X1 = X0))) \quad (7)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(\forall X2.(v7\_ordinal1\ X2)\Rightarrow((r1\_xxreal\_0\ X0\ X1)\Rightarrow(k7\_nat\_d\ (k2\_xcmplx\_0\ X1\ X2)\ X0 = k2\_nat\_1\ (k7\_nat\_d\ X1\ X0)\ X2)))) \quad (8)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(k4\_card\_1\ X0 = k1\_nat\_1\ X0\ np\_1) \quad (9)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(r1\_xxreal\_0\ (k7\_nat\_d\ X0\ X1)\ X0)) \quad (10)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(k7\_nat\_d\ (k2\_xcmplx\_0\ X0\ X1)\ X1 = X0)) \quad (11)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(r1\_xxreal\_0\ k6\_numbers\ X0) \quad (12)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(\neg(\neg r1\_xxreal\_0\ (k1\_nat\_1\ X1\ np\_1)\ X0)\wedge((r1\_xxreal\_0\ X1\ X0)\wedge(X0\neq X1)))) \quad (13)$$

Assume the following.

$$\forall X0.(v1\_xxreal\_0\ X0)\Rightarrow(\forall X1.(v1\_xxreal\_0\ X1)\Rightarrow(((r1\_xxreal\_0\ X0\ X1)\wedge(r1\_xxreal\_0\ X1\ X0))\Rightarrow(X0 = X1))) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1)\Rightarrow(m1\_subset\_1\ X0\ X1) \quad (15)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (((r1\_xxreal\_0 X0 X1) \wedge (v2\_xxreal\_0 X0)) \Rightarrow (v2\_xxreal\_0 X1))) \quad (16)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg r1\_xxreal\_0 np\_1 X0) \Rightarrow (X0 = k6\_numbers)) \quad (17)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((\neg r1\_xxreal\_0 (k1\_nat\_1 X1 np\_1) X0) \Leftrightarrow (r1\_xxreal\_0 X0 X1))) \quad (18)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\forall X2.(v7\_ordinal1 X2) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow (r1\_xxreal\_0 X0 (k2\_xcmplx\_0 X1 X2)))))) \quad (19)$$

Assume the following.

$$((v2\_xxreal\_0 np\_2) \wedge (m2\_subset\_1 np\_2 k1\_numbers k5\_numbers)) \wedge ((m1\_subset\_1 np\_2 k5\_numbers) \wedge (m1\_subset\_1 np\_2 k1\_numbers)) \quad (20)$$

Assume the following.

$$((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers)) \quad (21)$$

Assume the following.

$$(m2\_subset\_1 np\_0 k1\_numbers k5\_numbers) \wedge ((m1\_subset\_1 np\_0 k5\_numbers) \wedge (m1\_subset\_1 np\_0 k1\_numbers)) \quad (22)$$

Assume the following.

$$v1\_xboole\_0 np\_0 \quad (23)$$

Assume the following.

$$k2\_xcmplx\_0 np\_1 np\_1 = np\_2 \quad (24)$$

Assume the following.

$$k2\_xcmplx\_0 np\_0 np\_1 = np\_1 \quad (25)$$

Assume the following.

$$r1\_xxreal\_0 np\_0 np\_0 \quad (26)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1\ X0)\wedge(v7\_ordinal1\ X1))\Rightarrow(k7\_nat\_d\ X0\ X1 = k1\_xreal\_0\ X0\ X1) \quad (27)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (28)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (29)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k5\_numbers)\wedge(v7\_ordinal1\ X1))\Rightarrow(k2\_nat\_1\ X0\ X1 = k2\_xcmplx\_0\ X0\ X1) \quad (30)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1\ X0)\wedge(m1\_subset\_1\ X1\ k5\_numbers))\Rightarrow(k1\_nat\_1\ X0\ X1 = k2\_xcmplx\_0\ X0\ X1) \quad (31)$$

Assume the following.

$$\exists X0.(v1\_xboole\_0\ X0)\wedge((v1\_xcmplx\_0\ X0)\wedge((v1\_xxreal\_0\ X0)\wedge(v1\_xreal\_0\ X0))) \quad (32)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_xreal\_0\ X0)\wedge(v1\_xreal\_0\ X1))\Rightarrow(v1\_xreal\_0\ (k1\_xreal\_0\ X0\ X1)) \quad (33)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1\ X0)\wedge(v7\_ordinal1\ X1))\Rightarrow(v7\_ordinal1\ (k2\_xcmplx\_0\ X0\ X1)) \quad (34)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1\ X0)\wedge(v7\_ordinal1\ X1))\Rightarrow(m1\_subset\_1\ (k7\_nat\_d\ X0\ X1)\ k5\_numbers) \quad (35)$$

Assume the following.

$$k1\_xboole\_0 = the\ (\lambda X0 : \iota.v1\_xboole\_0\ X0) \quad (36)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Leftrightarrow(X0 \in k4\_ordinal1) \quad (37)$$

Assume the following.

$$\forall X0.\forall X1.((v7\_ordinal1\ X0)\wedge(m1\_subset\_1\ X1\ k5\_numbers))\Rightarrow (k1\_nat\_1\ X0\ X1 = k1\_nat\_1\ X1\ X0) \quad (38)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k4\_ordinal1)\Rightarrow(v7\_ordinal1\ X0) \quad (39)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0\ X0)\Rightarrow(v7\_ordinal1\ X0) \quad (40)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0\ X0)\Rightarrow(v1\_xxreal\_0\ X0) \quad (41)$$

Assume the following.

$$\forall X0.((v1\_xxreal\_0\ X0)\wedge(v2\_xxreal\_0\ X0))\Rightarrow((\neg v1\_xboole\_0\ X0)\wedge((v1\_xxreal\_0\ X0)\wedge(\neg v3\_xxreal\_0\ X0))) \quad (42)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(v1\_xxreal\_0\ X0) \quad (43)$$

Assume the following.

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(v1\_xreal\_0\ X0) \quad (44)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k1\_numbers)\Rightarrow(v1\_xreal\_0\ X0) \quad (45)$$

**Theorem 1**

$$\forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(v7\_ordinal1\ X1)\Rightarrow(((r1\_xxreal\_0\ (k1\_nat\_1\ X0\ np\_2)\ X1)\vee(r1\_xxreal\_0\ (k2\_nat\_1\ (k1\_nat\_1\ X0\ np\_1)\ np\_1)\ X1))\Rightarrow((\neg r1\_xxreal\_0\ X1\ (k1\_nat\_1\ X0\ np\_1))\wedge((\neg r1\_xxreal\_0\ X1\ (k7\_nat\_d\ (k1\_nat\_1\ X0\ np\_1)\ np\_1))\wedge((\neg r1\_xxreal\_0\ X1\ (k7\_nat\_d\ (k1\_nat\_1\ X0\ np\_1)\ np\_2))\wedge((r1\_xxreal\_0\ (k1\_nat\_1\ X0\ np\_1)\ X1)\wedge((\neg r1\_xxreal\_0\ X1\ (k2\_nat\_1\ (k7\_nat\_d\ X0\ np\_1)\ np\_1))\wedge((\neg r1\_xxreal\_0\ X1\ (k7\_nat\_d\ (k2\_nat\_1\ (k7\_nat\_d\ X0\ np\_1)\ np\_1)\ np\_1))\wedge((\neg r1\_xxreal\_0\ X1\ X0)\wedge((\neg r1\_xxreal\_0\ X1\ (k7\_nat\_d\ X0\ np\_1))\wedge((\neg r1\_xxreal\_0\ X1\ (k7\_nat\_d\ X0\ np\_2))\wedge(r1\_xxreal\_0\ X0\ X1)))))))))))))$$