

## t20\_nat\_2

(TMUp5XzQHefTpNVYssev21rLFYboPjnuYB)

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Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_nat\_d : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v3\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $k7\_nat\_d : \iota \Rightarrow \iota \Rightarrow \iota$  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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_xcmplx\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_int\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_nat\_d : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow (\neg(\neg r1\_xxreal\_0 X0 X1) \wedge ((\neg v2\_xxreal\_0 X0) \wedge (\neg v3\_xxreal\_0 X1)))) \quad (1)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\forall X2.(v7\_ordinal1 X2) \Rightarrow (((r1\_xxreal\_0 X0 (k7\_nat\_d X1 X2)) \wedge (r1\_xxreal\_0 X2 X1)) \Rightarrow (r1\_xxreal\_0 (k2\_xcmplx\_0 X0 X2) X1)))) \quad (2)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (k3\_nat\_d X0 np\_1 = X0) \quad (3)$$

Assume the following.

$$\forall X0.(v1\_xcmplx\_0 X0) \Rightarrow (k6\_xcmplx\_0 X0 k6\_numbers = X0) \quad (4)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\forall X2.(v7\_ordinal1 X2) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow (r1\_xxreal\_0 (k7\_nat\_d X0 X2) (k7\_nat\_d X1 X2)))))) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge (v7\_ordinal1 X0)) \Rightarrow (k3\_nat\_d X0 \quad X0 = np\_1) \quad (6)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\forall X2. (v7\_ordinal1 X2) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow (k7\_nat\_d (k2\_xcmplx\_0 X1 X2) X0 = k2\_nat\_1 (k7\_nat\_d X1 X0) X2)))) \quad (7)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\forall X2. (v7\_ordinal1 X2) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow (k7\_nat\_d (k2\_xcmplx\_0 X1 X2) X0 = k6\_xcmplx\_0 (k2\_xcmplx\_0 X1 X2) X0)))) \quad (8)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (k7\_nat\_d (k2\_xcmplx\_0 X0 X1) X1 = X0)) \quad (9)$$

Assume the following.

$$\forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow (\forall X2. (v1\_xxreal\_0 X2) \Rightarrow (((r1\_xxreal\_0 X0 X1) \wedge (r1\_xxreal\_0 X1 X2)) \Rightarrow (r1\_xxreal\_0 X0 X2)))) \quad (10)$$

Assume the following.

$$\forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow (((r1\_xxreal\_0 X0 X1) \wedge (v3\_xxreal\_0 X1)) \Rightarrow (v3\_xxreal\_0 X0))) \quad (11)$$

Assume the following.

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

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((\neg r1\_xxreal\_0 X1 X0) \Rightarrow (k3\_nat\_d X0 X1 = k6\_numbers))) \quad (13)$$

Assume the following.

$$\forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow ((r1\_xxreal\_0 X1 X0) \Rightarrow (k2\_xcmplx\_0 (k1\_xxreal\_0 X0 X1) X1 = X0))) \quad (14)$$

Assume the following.

$$\forall X0.(v1\_xxreal\_0 X0) \Rightarrow (\forall X1.(v1\_xxreal\_0 X1) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow (k1\_xxreal\_0 X1 X0 = k6\_xcmplx\_0 X1 X0))) \quad (15)$$

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.

$$\forall X0.(v1\_xcmplx\_0 X0) \Rightarrow (k2\_xcmplx\_0 X0 \ k6\_numbers = X0) \quad (17)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((\neg r1\_xxreal\_0 (k2\_xcmplx\_0 X0 X1) X0) \Leftrightarrow (r1\_xxreal\_0 np\_1 X1))) \quad (18)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((X0 \neq k6\_numbers) \Rightarrow (k3\_nat\_d (k2\_xcmplx\_0 X1 X0) X0 = k2\_nat\_1 (k3\_nat\_d X1 X0) np\_1))) \quad (19)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((\neg r1\_xxreal\_0 (k1\_nat\_1 X1 np\_1) X0) \Leftrightarrow (r1\_xxreal\_0 X0 X1))) \quad (20)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\neg (\neg r1\_xxreal\_0 X0 \ k6\_numbers) \wedge ((k3\_nat\_d X1 X0 = k6\_numbers) \wedge (r1\_xxreal\_0 X0 X1)))) \quad (21)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (r1\_xxreal\_0 X0 (k2\_xcmplx\_0 X0 X1))) \quad (22)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow (\neg (r1\_xxreal\_0 X0 X1) \wedge (\forall X2.(v7\_ordinal1 X2) \Rightarrow (X1 \neq k2\_xcmplx\_0 X0 X2)))) \quad (23)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((v1\_xcmplx\_0 X0) \wedge ((v1\_xcmplx\_0 X1) \wedge (v1\_xcmplx\_0 X2))) \Rightarrow (k2\_xcmplx\_0 (k2\_xcmplx\_0 X0 X1) X2 = k2\_xcmplx\_0 X0 (k2\_xcmplx\_0 X1 X2)) \quad (24)$$

Assume the following.

$$\begin{aligned} & ((v2\_xreal\_0 \text{ } np\_1) \wedge (m2\_subset\_1 \text{ } np\_1 \text{ } k1\_numbers \text{ } k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \text{ } np\_1 \text{ } k5\_numbers) \wedge (m1\_subset\_1 \text{ } np\_1 \text{ } k1\_numbers)) \end{aligned} \quad (25)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xcmplx\_0 \text{ } X0) \wedge (v1\_xcmplx\_0 \text{ } X1)) \Rightarrow (k2\_xcmplx\_0 \text{ } X0 \text{ } (k4\_xcmplx\_0 \text{ } X1) = k6\_xcmplx\_0 \text{ } X0 \text{ } X1) \quad (26)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xreal\_0 \text{ } X0) \wedge (v1\_xreal\_0 \text{ } X1)) \Rightarrow (r1\_xreal\_0 \text{ } X0 \text{ } X0) \quad (27)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 \text{ } X0) \wedge (v7\_ordinal1 \text{ } X1)) \Rightarrow (k7\_nat\_d \text{ } X0 \text{ } X1 = k1\_xreal\_0 \text{ } X0 \text{ } X1) \quad (28)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 \text{ } X0) \wedge (v7\_ordinal1 \text{ } X1)) \Rightarrow (k3\_nat\_d \text{ } X0 \text{ } X1 = k5\_int\_1 \text{ } X0 \text{ } X1) \quad (29)$$

Assume the following.

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

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 \text{ } X0) \wedge (v7\_ordinal1 \text{ } X1)) \Rightarrow (k1\_nat\_d \text{ } X0 \text{ } X1 = k5\_int\_1 \text{ } X0 \text{ } X1) \quad (31)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 \text{ } X0) \wedge (m1\_subset\_1 \text{ } X1 \text{ } k5\_numbers)) \Rightarrow (k1\_nat\_1 \text{ } X0 \text{ } X1 = k2\_xcmplx\_0 \text{ } X0 \text{ } X1) \quad (32)$$

Assume the following.

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

Assume the following.

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

Assume the following.

$$\forall X0.((\neg v3\_xxreal\_0 X0) \wedge (v1\_xreal\_0 X0)) \Rightarrow ((v1\_xcmplx\_0 (k4\_xcmplx\_0 X0)) \wedge (\neg v2\_xxreal\_0 (k4\_xcmplx\_0 X0))) \quad (35)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 X0) \wedge (v7\_ordinal1 X1)) \Rightarrow (m1\_subset\_1 (k7\_nat\_d X0 X1) k5\_numbers) \quad (36)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 X0) \wedge (v7\_ordinal1 X1)) \Rightarrow (m1\_subset\_1 (k3\_nat\_d X0 X1) k5\_numbers) \quad (37)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 X0) \wedge (v7\_ordinal1 X1)) \Rightarrow (v7\_ordinal1 (k1\_nat\_d X0 X1)) \quad (38)$$

Assume the following.

$$\forall X0. \forall X1. ((v1\_xcmplx\_0 X0) \wedge (v1\_xcmplx\_0 X1)) \Rightarrow (k2\_xcmplx\_0 X0 X1 = k2\_xcmplx\_0 X1 X0) \quad (39)$$

Assume the following.

$$\forall X0. \forall X1. ((v7\_ordinal1 X0) \wedge (m1\_subset\_1 X1 k5\_numbers)) \Rightarrow (k1\_nat\_1 X0 X1 = k1\_nat\_1 X1 X0) \quad (40)$$

Assume the following.

$$\forall X0. ((v1\_xxreal\_0 X0) \wedge (v2\_xxreal\_0 X0)) \Rightarrow ((\neg v1\_xboole\_0 X0) \wedge ((v1\_xreal\_0 X0) \wedge (\neg v3\_xxreal\_0 X0))) \quad (41)$$

Assume the following.

$$\forall X0. (v7\_ordinal1 X0) \Rightarrow ((v7\_ordinal1 X0) \wedge (\neg v3\_xxreal\_0 X0)) \quad (42)$$

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.

$$\forall X0. (v7\_ordinal1 X0) \Rightarrow (v1\_xcmplx\_0 X0) \quad (45)$$

**Theorem 1**

$$\forall X0. (v7\_ordinal1 X0) \Rightarrow (\forall X1. (v7\_ordinal1 X1) \Rightarrow ((r1\_xxreal\_0 X0 X1) \Rightarrow ((r1\_xxreal\_0 (k2\_xcmplx\_0 X0 X0) X1) \vee (k3\_nat\_d X1 X0 = np\_1))))$$