

## t6\_ndiff\_4

(TMKufwkAby4byLCNTfeLue1sNSxgmXW8eq4)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $r2\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_rcomp\_1 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_real\_ns1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $r1\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v5\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v6\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v7\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v8\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v4\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v2\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $r2\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_euclid : \iota \Rightarrow \iota$  be given. Let  $r1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_real\_ns1 : \iota \Rightarrow \iota$  be given. Let  $u1\_rlvect\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_real\_ns1 : \iota \Rightarrow \iota$  be given. Let  $u1\_normsp\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_real\_ns1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
 & (\forall X1. ((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & \quad k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge \\
 & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 \\
 & \quad (k4\_real\_ns1 X0)))))) \Rightarrow (\forall X3. (v1\_xreal\_0 X3) \Rightarrow ((X2 = X1) \Rightarrow \\
 & ((r1\_ndiff\_4 X0 X1 X3) \Leftrightarrow (r1\_ndiff\_3 (k4\_real\_ns1 X0) X2 X3))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v7\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge \\ & ((v5\_rlvect\_1 X0) \wedge ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 \\ & X0) \wedge ((v3\_normsp\_0 X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge \\ & (l1\_normsp\_1 X0)))))))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 ( \\ & k1\_zfmisc\_1 k1\_numbers)) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X0)))) \Rightarrow \\ & ((r2\_ndiff\_3 X0 X2 X1) \Rightarrow (v3\_rcomp\_1 X1)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ & X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \end{aligned} \quad (3)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (4)$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg v2\_struct\_0 (k4\_real\_ns1 X0)) \wedge \\ & ((v13\_algstr\_0 (k4\_real\_ns1 X0)) \wedge ((v2\_rlvect\_1 (k4\_real\_ns1 \\ & X0)) \wedge ((v3\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v4\_rlvect\_1 (k4\_real\_ns1 \\ & X0)) \wedge ((v5\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v6\_rlvect\_1 (k4\_real\_ns1 \\ & X0)) \wedge ((v7\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v8\_rlvect\_1 (k4\_real\_ns1 \\ & X0)) \wedge ((v3\_normsp\_0 (k4\_real\_ns1 X0)) \wedge ((v4\_normsp\_0 (k4\_real\_ns1 \\ & X0)) \wedge ((v1\_normsp\_1 (k4\_real\_ns1 X0)) \wedge (v2\_normsp\_1 (k4\_real\_ns1 \\ & X0)))))))))))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge (v7\_ordinal1 X0)) \Rightarrow ((\neg v2\_struct\_0 \\ & (k4\_real\_ns1 X0)) \wedge ((\neg v7\_struct\_0 (k4\_real\_ns1 X0)) \wedge (v1\_normsp\_1 \\ & (k4\_real\_ns1 X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\neg v1\_xboole\_0 k1\_numbers \quad (8)$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \quad (9)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg v2\_struct\_0 (k4\_real\_ns1 X0)) \wedge ((v1\_normsp\_1 (k4\_real\_ns1 X0)) \wedge (l1\_normsp\_1 (k4\_real\_ns1 X0)))) \quad (10)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow ((v1\_funct\_1 (k2\_partfun1 X0 X1 X2 X3)) \wedge (m1\_subset\_1 (k2\_partfun1 X0 X1 X2 X3) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))) \quad (11)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v7\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))))))) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_3 X0 X1 X2) \Leftrightarrow ((r1\_tarski X2 (k1\_relset\_1 k1\_numbers X1)) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow ((X3 \in X2) \Rightarrow (r1\_ndiff\_3 X0 (k2\_partfun1 k1\_numbers (u1\_struct\_0 X0) X1 X2) X3)))))) \quad (12)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v1\_normsp\_1 X1) \wedge (l1\_normsp\_1 X1))) \Rightarrow ((X1 = k4\_real\_ns1 X0) \Leftrightarrow ((u1\_struct\_0 X1 = k1\_euclid X0) \wedge ((k4\_struct\_0 X1 = k5\_euclid X0) \wedge ((r1\_funct\_2 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X1)) (u1\_struct\_0 X1) (k2\_zfmisc\_1 (k1\_euclid X0) (k1\_euclid X0)) (k1\_euclid X0) (u1\_algstr\_0 X1) (k1\_real\_ns1 X0)) \wedge ((r1\_funct\_2 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X1) (u1\_struct\_0 X1) (k2\_zfmisc\_1 k1\_numbers (k1\_euclid X0)) (k1\_euclid X0) (u1\_rlvect\_1 X1) (k2\_real\_ns1 X0)) \wedge (r1\_funct\_2 (u1\_struct\_0 X1) k1\_numbers (k1\_euclid X0) k1\_numbers (u1\_normsp\_0 X1) (k3\_real\_ns1 X0)))))))))) \quad (13)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_4 X0 X1 X2) \Leftrightarrow ((r1\_tarski X2 (k1\_relset\_1 k1\_numbers X1)) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow ((X3 \in X2) \Rightarrow (r1\_ndiff\_4 X0 (k2\_partfun1 k1\_numbers (k1\_euclid X0) X1 X2) X3)))))) \quad (14)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \quad (15)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (v1\_xreal\_0 X0) \quad (16)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\ & \quad (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 k1\_numbers)) \Rightarrow (\forall X2. \\ & ((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers \\ & (k1\_euclid X0)))))) \Rightarrow ((r2\_ndiff\_4 X0 X2 X1) \Rightarrow (v3\_rcomp\_1 X1)))) \end{aligned}$$