

# t29\_ndiff\_4 (TMHTsziVy- Hxwiw46MKQsDoURmR8i8jmnTRb)

October 27, 2020

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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_euclid : \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $r2\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_real\_ns1 : \iota \Rightarrow \iota$  be given. Let  $k1\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_pdiff\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $k1\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $v2\_struct\_0 : \iota \Rightarrow o$  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  $v1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $v2\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_ndiff\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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. Let  $r1\_ndiff\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let

$k4\_finseq\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.(m2\_subset\_1 X1 k1\_numbers k5\_numbers) \Rightarrow \\
& (\forall X2.((\neg v1\_xboole\_0 X2) \wedge (m2\_subset\_1 X2 k1\_numbers k5\_numbers)) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 X2)))))) \Rightarrow (((r1\_xxreal\_0 \\
& \quad np\_1 X1) \wedge ((r1\_xxreal\_0 X1 X2) \wedge (r2\_ndiff\_3 (k4\_real\_ns1 X2) X3 \\
& \quad X0))) \Rightarrow ((r2\_ndiff\_3 (k4\_real\_ns1 np\_1) (k1\_partfun1 k1\_numbers \\
& \quad (u1\_struct\_0 (k4\_real\_ns1 X2)) (u1\_struct\_0 (k4\_real\_ns1 X2)) \\
& \quad (u1\_struct\_0 (k4\_real\_ns1 np\_1)) X3 (k4\_pdiff\_1 X1 X2)) X0) \wedge ( \\
& \quad r2\_relset\_1 k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 np\_1)) (k1\_partfun1 \\
& \quad k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 X2)) (u1\_struct\_0 (k4\_real\_ns1 \\
& \quad X2)) (u1\_struct\_0 (k4\_real\_ns1 np\_1)) (k2\_ndiff\_3 (k4\_real\_ns1 \\
& \quad X2) X3 X0) (k4\_pdiff\_1 X1 X2)) (k2\_ndiff\_3 (k4\_real\_ns1 np\_1) ( \\
& \quad k1\_partfun1 k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 X2)) (u1\_struct\_0 \\
& \quad (k4\_real\_ns1 X2)) (u1\_struct\_0 (k4\_real\_ns1 np\_1)) X3 (k4\_pdiff\_1 \\
& \quad X1 X2)) X0))))))
\end{aligned} \tag{2}$$

Assume the following.

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

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{4}$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \tag{5}$$

Assume the following.

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

Assume the following.

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

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.

$$\forall X0.\forall X1.\forall X2.(((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X0 k5\_numbers)) \wedge ((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (k1\_euclid X0)))))) \Rightarrow ((v1\_funct\_1 (k2\_ndiff\_4 X0 X1 X2)) \wedge (m1\_subset\_1 (k2\_ndiff\_4 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (k1\_euclid X0)))))) \quad (12)$$

Assume the following.

$$\forall X0.(((\neg v2\_struct\_0 X0) \wedge ((\neg v7\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))))))) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_3 X0 X1 X2) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X0)))))) \Rightarrow ((X3 = k2\_ndiff\_3 X0 X1 X2) \Leftrightarrow ((k1\_relset\_1 k1\_numbers X3 = X2) \wedge (\forall X4.(m1\_subset\_1 X4 k1\_numbers) \Rightarrow ((X4 \in X2) \Rightarrow (k1\_funct\_1 X3 X4 = k1\_ndiff\_3 X0 X1 X4))))))) \quad (13)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v7\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\
& X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge \\
& ((v5\_rlvect\_1 X0) \wedge ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 \\
& X0) \wedge ((v3\_normsp\_0 X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge \\
& (l1\_normsp\_1 X0)))))))))) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge \\
& (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 \\
& X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_3 X0 X1 X2) \Leftrightarrow ((r1\_tarski X2 (k1\_relset\_1 \\
& k1\_numbers X1)) \wedge (\forall X3.(m1\_subset\_1 X3 k1\_numbers) \Rightarrow ((X3 \in \\
& X2) \Rightarrow (r1\_ndiff\_3 X0 (k2\_partfun1 k1\_numbers (u1\_struct\_0 X0) X1 \\
& X2) X3))))))
\end{aligned} \tag{14}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\
& ((v1\_normsp\_1 X1) \wedge (l1\_normsp\_1 X1))) \Rightarrow ((X1 = k4\_real\_ns1 X0) \Leftrightarrow \\
& ((u1\_struct\_0 X1 = k1\_euclid X0) \wedge ((k4\_struct\_0 X1 = k5\_euclid X0) \wedge \\
& ((r1\_funct\_2 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X1)) \\
& (u1\_struct\_0 X1) (k2\_zfmisc\_1 (k1\_euclid X0) (k1\_euclid X0)) ( \\
& k1\_euclid X0) (u1\_algstr\_0 X1) (k1\_real\_ns1 X0)) \wedge ((r1\_funct\_2 \\
& (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X1)) (u1\_struct\_0 X1) (k2\_zfmisc\_1 \\
& k1\_numbers (k1\_euclid X0)) (k1\_euclid X0) (u1\_rlvect\_1 X1) (k2\_real\_ns1 \\
& X0)) \wedge (r1\_funct\_2 (u1\_struct\_0 X1) k1\_numbers (k1\_euclid X0) k1\_numbers \\
& (u1\_normsp\_0 X1) (k3\_real\_ns1 X0))))))
\end{aligned} \tag{15}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_4 X0 X1 X2) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k1\_numbers (k1\_euclid X0)))))) \Rightarrow ((X3 = k2\_ndiff\_4 X0 X1 X2) \Leftrightarrow ((k1\_relset\_1 \\
& k1\_numbers X3 = X2) \wedge (\forall X4.(m1\_subset\_1 X4 k1\_numbers) \Rightarrow ( \\
& (X4 \in X2) \Rightarrow (k1\_funct\_1 X3 X4 = k1\_ndiff\_4 X0 X1 X4))))))
\end{aligned} \tag{16}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X2.(r2\_ndiff\_4 X0 X1 X2) \Leftrightarrow \\
& ((r1\_tarski X2 (k1\_relset\_1 k1\_numbers X1)) \wedge (\forall X3.(m1\_subset\_1 \\
& X3 k1\_numbers) \Rightarrow ((X3 \in X2) \Rightarrow (r1\_ndiff\_4 X0 (k2\_partfun1 k1\_numbers \\
& (k1\_euclid X0) X1 X2) X3))))))
\end{aligned} \tag{17}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (m2\_subset\_1 X0 k1\_numbers k5\_numbers)) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X2.(v1\_xreal\_0 X2) \Rightarrow ( \\
& \quad (r1\_ndiff\_4 X0 X1 X2) \Leftrightarrow (\exists X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 \\
& \quad X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 \\
& \quad X0)))))) \wedge ((X1 = X3) \wedge (r1\_ndiff\_3 (k4\_real\_ns1 X0) X3 X2))))))
\end{aligned} \tag{18}$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (k1\_euclid X0 = k4\_finseq\_2 X0 k1\_numbers) \tag{19}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \tag{20}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k1\_numbers) \Rightarrow (v1\_xreal\_0 X0) \tag{21}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.\forall X1.(m2\_subset\_1 X1 k1\_numbers k5\_numbers) \Rightarrow \\
& (\forall X2.((\neg v1\_xboole\_0 X2) \wedge (m2\_subset\_1 X2 k1\_numbers k5\_numbers)) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& \quad k1\_numbers (k1\_euclid X2)))))) \Rightarrow (((r1\_xxreal\_0 np\_1 X1) \wedge ((r1\_xxreal\_0 \\
& \quad X1 X2) \wedge (r2\_ndiff\_4 X2 X3 X0))) \Rightarrow ((r2\_ndiff\_3 (k4\_real\_ns1 np\_1) \\
& \quad (k1\_partfun1 k1\_numbers (k1\_euclid X2) (u1\_struct\_0 (k4\_real\_ns1 \\
& \quad X2)) (u1\_struct\_0 (k4\_real\_ns1 np\_1)) X3 (k4\_pdiff\_1 X1 X2)) X0) \wedge \\
& (r2\_relset\_1 k1\_numbers (u1\_struct\_0 (k4\_real\_ns1 np\_1)) (k1\_partfun1 \\
& \quad k1\_numbers (k1\_euclid X2) (u1\_struct\_0 (k4\_real\_ns1 X2)) (u1\_struct\_0 \\
& \quad (k4\_real\_ns1 np\_1)) (k2\_ndiff\_4 X2 X3 X0) (k4\_pdiff\_1 X1 X2)) ( \\
& \quad k2\_ndiff\_3 (k4\_real\_ns1 np\_1) (k1\_partfun1 k1\_numbers (k1\_euclid \\
& \quad X2) (u1\_struct\_0 (k4\_real\_ns1 X2)) (u1\_struct\_0 (k4\_real\_ns1 \\
& \quad np\_1)) X3 (k4\_pdiff\_1 X1 X2)) X0))))))
\end{aligned}$$