

# t15\_nfcont\_4 (TMKDEMFr- jqDGK2R8B353qMMnMstvCuxFWLP)

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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  $v1\_xreal\_0 : \iota \Rightarrow o$  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  $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_nfcont\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_integr15 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_real\_ns1 : \iota \Rightarrow \iota$  be given. Let  $r1\_nfcont\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $v2\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $k6\_vfunct\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_vfunct\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $l1\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l2\_normsp\_0 : \iota \Rightarrow o$  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. Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ( \\
& (v13\_algstr\_0 X1) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 \\
& X1) \wedge ((v5\_rlvect\_1 X1) \wedge ((v6\_rlvect\_1 X1) \wedge ((v7\_rlvect\_1 X1) \wedge \\
& ((v8\_rlvect\_1 X1) \wedge ((v3\_normsp\_0 X1) \wedge ((v4\_normsp\_0 X1) \wedge ((v2\_normsp\_1 \\
& X1) \wedge (l1\_normsp\_1 X1)))))))))) \Rightarrow (\forall X2.((v1\_funct\_1 \\
& X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 \\
& X1)))))) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 k1\_numbers (u1\_struct\_0 X1)))))) \Rightarrow (((X0 \in k9\_subset\_1 \\
& k1\_numbers (k1\_relset\_1 k1\_numbers X2) (k1\_relset\_1 k1\_numbers \\
& X3)) \wedge ((r1\_nfcont\_3 X1 X2 X0) \wedge (r1\_nfcont\_3 X1 X3 X0))) \Rightarrow ((r1\_nfcont\_3 \\
& X1 (k6\_vfunct\_1 k1\_numbers X1 X2 X3) X0) \wedge (r1\_nfcont\_3 X1 (k2\_vfunct\_1 \\
& k1\_numbers X1 X2 X3) X0))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m2\_subset\_1 X0 k1\_numbers k5\_numbers) \Rightarrow (\forall X1. \\
& (\neg v1\_xboole\_0 X1) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge (m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X1 (u1\_struct\_0 (k4\_real\_ns1 X0)))))) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X1 (u1\_struct\_0 (k4\_real\_ns1 X0)))))) \Rightarrow (\forall X4.((v1\_funct\_1 \\
& X4) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X1 (k1\_euclid X0)))))) \Rightarrow \\
& (\forall X5.((v1\_funct\_1 X5) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X1 (k1\_euclid X0)))))) \Rightarrow (((X2 = X4) \wedge (X3 = X5)) \Rightarrow (k2\_vfunct\_1 X1 (k4\_real\_ns1 \\
& X0) X2 X3 = k8\_integr15 X0 X1 X4 X5))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\
& (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\
& X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1))
\end{aligned} \tag{4}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{5}$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg v2\_struct\_0 (k4\_real\_ns1 X0)) \wedge \\
& ((v13\_algstr\_0 (k4\_real\_ns1 X0)) \wedge ((v2\_rlvect\_1 (k4\_real\_ns1 \\
& X0)) \wedge ((v3\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v4\_rlvect\_1 (k4\_real\_ns1 \\
& X0)) \wedge ((v5\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v6\_rlvect\_1 (k4\_real\_ns1 \\
& X0)) \wedge ((v7\_rlvect\_1 (k4\_real\_ns1 X0)) \wedge ((v8\_rlvect\_1 (k4\_real\_ns1 \\
& X0)) \wedge ((v3\_normsp\_0 (k4\_real\_ns1 X0)) \wedge ((v4\_normsp\_0 (k4\_real\_ns1 \\
& X0)) \wedge ((v1\_normsp\_1 (k4\_real\_ns1 X0)) \wedge (v2\_normsp\_1 (k4\_real\_ns1 \\
& X0))))))))))
\end{aligned} \tag{7}$$

Assume the following.

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

Assume the following.

$$\forall X0.(l1\_rlvect\_1 \ X0) \Rightarrow (l2\_algstr\_0 \ X0) \quad (9)$$

Assume the following.

$$\forall X0.(l1\_normsp\_1 \ X0) \Rightarrow ((l1\_rlvect\_1 \ X0) \wedge (l2\_normsp\_0 \ X0)) \quad (10)$$

Assume the following.

$$m1\_subset\_1 \ k5\_numbers \ (k1\_zfmisc\_1 \ k1\_numbers) \quad (11)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 \ X0) \Rightarrow ((\neg v2\_struct\_0 \ (k4\_real\_ns1 \ X0)) \wedge ((v1\_normsp\_1 \ (k4\_real\_ns1 \ X0)) \wedge (l1\_normsp\_1 \ (k4\_real\_ns1 \ X0)))) \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 \ X0) \wedge \\ & (((\neg v2\_struct\_0 \ X1) \wedge (l2\_algstr\_0 \ X1)) \wedge (((v1\_funct\_1 \ X2) \wedge (m1\_subset\_1 \\ & \quad X2 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ (u1\_struct\_0 \ X1)))) \wedge ((v1\_funct\_1 \\ & \quad X3) \wedge (m1\_subset\_1 \ X3 \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ (u1\_struct\_0 \\ & \quad X1)))))) \Rightarrow ((v1\_funct\_1 \ (k2\_vfunct\_1 \ X0 \ X1 \ X2 \ X3)) \wedge (m1\_subset\_1 \\ & \quad (k2\_vfunct\_1 \ X0 \ X1 \ X2 \ X3) \ (k1\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ (u1\_struct\_0 \\ & \quad \quad X1)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v7\_ordinal1 \ X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 \ X1) \wedge \\ & ((v1\_normsp\_1 \ X1) \wedge (l1\_normsp\_1 \ X1))) \Rightarrow ((X1 = k4\_real\_ns1 \ X0) \Leftrightarrow \\ & ((u1\_struct\_0 \ X1 = k1\_euclid \ X0) \wedge ((k4\_struct\_0 \ X1 = k5\_euclid \ X0) \wedge \\ & \quad ((r1\_funct\_2 \ (k2\_zfmisc\_1 \ (u1\_struct\_0 \ X1) \ (u1\_struct\_0 \ X1)) \\ & \quad (u1\_struct\_0 \ X1) \ (k2\_zfmisc\_1 \ (k1\_euclid \ X0) \ (k1\_euclid \ X0)) \ ( \\ & \quad \quad k1\_euclid \ X0) \ (u1\_algstr\_0 \ X1) \ (k1\_real\_ns1 \ X0)) \wedge ((r1\_funct\_2 \\ & \quad (k2\_zfmisc\_1 \ k1\_numbers \ (u1\_struct\_0 \ X1)) \ (u1\_struct\_0 \ X1) \ (k2\_zfmisc\_1 \\ & \quad \quad k1\_numbers \ (k1\_euclid \ X0)) \ (k1\_euclid \ X0) \ (u1\_rlvect\_1 \ X1) \ (k2\_real\_ns1 \\ & \quad \quad X0)) \wedge (r1\_funct\_2 \ (u1\_struct\_0 \ X1) \ k1\_numbers \ (k1\_euclid \ X0) \ k1\_numbers \\ & \quad \quad (u1\_normsp\_0 \ X1) \ (k3\_real\_ns1 \ X0)))))) \end{aligned} \quad (14)$$

Assume the following.

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

**Theorem 1**

$$\begin{aligned} & \forall X0.(m2\_subset\_1 X0 k1\_numbers k5\_numbers) \Rightarrow (\forall X1. \\ & (v1\_xreal\_0 X1) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge (m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers (k1\_euclid X0)))))) \Rightarrow (\forall X3. \\ & ((v1\_funct\_1 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k1\_numbers \\ & (k1\_euclid X0)))))) \Rightarrow (((X1 \in k9\_subset\_1 k1\_numbers (k1\_relset\_1 \\ & k1\_numbers X2) (k1\_relset\_1 k1\_numbers X3)) \wedge ((r1\_nfcont\_4 X0 \\ & X2 X1) \wedge (r1\_nfcont\_4 X0 X3 X1))) \Rightarrow (r1\_nfcont\_4 X0 (k8\_integr15 X0 \\ & k1\_numbers X2 X3) X1)))) \end{aligned}$$