

# t41\_hausdorf (TM- SZuNTsWQpW6d36gaTQ116xNnGsW9Kbt9R)

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Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k15\_euclid : \iota \Rightarrow \iota$  be given. Let  $v2\_compts\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_hausdorf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v6\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v7\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v8\_metric\_1 : \iota \Rightarrow o$  be given. Let  $v9\_metric\_1 : \iota \Rightarrow o$  be given. Let  $l1\_metric\_1 : \iota \Rightarrow o$  be given. Let  $k3\_pcomps\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_hausdorf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $g1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v6\_membered : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  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  $v5\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $k14\_euclid : \iota \Rightarrow \iota$  be given. Let  $v1\_metric\_1 : \iota \Rightarrow o$  be given. Let  $l1\_rltopsp1 : \iota \Rightarrow o$  be given. Let  $l1\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $g1\_rlvect\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $u1\_rlvect\_1 : \iota \Rightarrow \iota$  be given. Let  $k10\_funcsdom : \iota \Rightarrow \iota$  be given. Let  $k2\_finseq\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v6\_metric\_1 X0) \wedge ((v7\_metric\_1 \\
& X0) \wedge ((v8\_metric\_1 X0) \wedge (v9\_metric\_1 X0) \wedge (l1\_metric\_1 X0)))))) \Rightarrow \\
& (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 (k3\_pcomps\_1 X0)))))) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 \\
& X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_pcomps\_1 X0)))))) \Rightarrow \\
& (((v2\_compts\_1 X1 (k3\_pcomps\_1 X0)) \wedge ((v2\_compts\_1 X2 (k3\_pcomps\_1 \\
& X0)) \wedge (k1\_hausdorf X0 X1 X2 = k6\_numbers))) \Rightarrow (X1 = X2)))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ X0))) \Rightarrow (\forall X1.((v2\_compts\_1 X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (u1\_struct\_0 X0)))) \Leftrightarrow ((v2\_compts\_1 X1 (g1\_pre\_topc (u1\_struct\_0 \\ X0) (u1\_pre\_topc X0))) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ (g1\_pre\_topc (u1\_struct\_0 X0) (u1\_pre\_topc X0))))))) \end{aligned} \quad (2)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (3)$$

Assume the following.

$$v6\_membered k4\_ordinal1 \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1 X0) \Rightarrow ((v2\_pre\_topc (k15\_euclid X0)) \wedge \\ ((v13\_algstr\_0 (k15\_euclid X0)) \wedge ((v2\_rlvect\_1 (k15\_euclid X0)) \wedge \\ ((v3\_rlvect\_1 (k15\_euclid X0)) \wedge ((v4\_rlvect\_1 (k15\_euclid X0)) \wedge \\ ((v5\_rlvect\_1 (k15\_euclid X0)) \wedge ((v6\_rlvect\_1 (k15\_euclid X0)) \wedge \\ ((v7\_rlvect\_1 (k15\_euclid X0)) \wedge ((v8\_rlvect\_1 (k15\_euclid X0)) \wedge \\ (v5\_rltopsp1 (k15\_euclid X0)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg v2\_struct\_0 (k15\_euclid X0)) \wedge \\ (v5\_rltopsp1 (k15\_euclid X0))) \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1 X0) \Rightarrow ((\neg v2\_struct\_0 (k14\_euclid X0)) \wedge \\ ((v1\_metric\_1 (k14\_euclid X0)) \wedge ((v6\_metric\_1 (k14\_euclid X0)) \wedge \\ ((v7\_metric\_1 (k14\_euclid X0)) \wedge ((v8\_metric\_1 (k14\_euclid X0)) \wedge \\ (v9\_metric\_1 (k14\_euclid X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(l1\_rltopsp1 X0) \Rightarrow ((l1\_rlvect\_1 X0) \wedge (l1\_pre\_topc X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1\_subset\_1 X0 k5\_numbers) \wedge \\ ((m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 (k15\_euclid X0)))) \wedge \\ (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k15\_euclid X0)))))) \Rightarrow \\ (m1\_subset\_1 (k3\_hausdorff X0 X1 X2) k1\_numbers) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow ((v5\_rltopsp1 (k15\_euclid X0)) \wedge \\ (l1\_rltopsp1 (k15\_euclid X0))) \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1\ X0) \Rightarrow & ((v1\_metric\_1\ (k14\_euclid\ X0)) \wedge \\ & ((v6\_metric\_1\ (k14\_euclid\ X0)) \wedge ((v7\_metric\_1\ (k14\_euclid\ X0)) \wedge \\ & ((v8\_metric\_1\ (k14\_euclid\ X0)) \wedge ((v9\_metric\_1\ (k14\_euclid\ X0)) \wedge \\ & (l1\_metric\_1\ (k14\_euclid\ X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.(v7\_ordinal1\ X0) \Rightarrow & (\forall X1.((v5\_rltopsp1\ X1) \wedge ( \\ l1\_rltopsp1\ X1)) \Rightarrow & ((X1 = k15\_euclid\ X0) \Leftrightarrow ((g1\_pre\_topc\ (u1\_struct\_0 \\ X1)\ (u1\_pre\_topc\ X1) = k3\_pcomps\_1\ (k14\_euclid\ X0)) \wedge (g1\_rlvect\_1 \\ (u1\_struct\_0\ X1)\ (u2\_struct\_0\ X1)\ (u1\_algstr\_0\ X1)\ (u1\_rlvect\_1 \\ X1) = k10\_funcsdom\ (k2\_finseq\_1\ X0)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.(m1\_subset\_1\ X0\ k5\_numbers) \Rightarrow & (\forall X1.(m1\_subset\_1 \\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k15\_euclid\ X0)))) \Rightarrow & (\forall X2. \\ (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k15\_euclid\ X0)))) \Rightarrow & \\ (\forall X3.(m1\_subset\_1\ X3\ k1\_numbers) \Rightarrow & ((X3 = k3\_hausdorff\ X0 \\ X1\ X2) \Leftrightarrow (\exists X4.(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ (k3\_pcomps\_1\ (k14\_euclid\ X0)))))) \wedge (\exists X5.(m1\_subset\_1\ X5 \\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k3\_pcomps\_1\ (k14\_euclid\ X0)))))) \wedge \\ ((X1 = X4) \wedge ((X2 = X5) \wedge (X3 = k1\_hausdorff\ (k14\_euclid\ X0)\ X4\ X5)))))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(v6\_membered\ X0) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ X0) \Rightarrow (v7\_ordinal1\ X1)) \quad (14)$$

### Theorem 1

$$\begin{aligned} \forall X0.(m1\_subset\_1\ X0\ k5\_numbers) \Rightarrow & (\forall X1.((\neg v1\_xboole\_0 \\ X1) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k15\_euclid\ X0)))))) \Rightarrow & \\ (\forall X2.((\neg v1\_xboole\_0\ X2) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1 \\ (u1\_struct\_0\ (k15\_euclid\ X0)))))) \Rightarrow & (((v2\_compts\_1\ X1\ (k15\_euclid \\ X0)) \wedge ((v2\_compts\_1\ X2\ (k15\_euclid\ X0)) \wedge (k3\_hausdorff\ X0\ X1\ X2 = \\ k6\_numbers))) \Rightarrow (X1 = X2))) \end{aligned}$$