

## t38\_hausdorf

(TMS3fasbENxk6QWve1Vm2MC8w6P5i6SBu4y)

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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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_pcomps\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_compts\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_hausdorf : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_weierstr : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $k4\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k2\_square\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_membered : \iota \Rightarrow o$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $v2\_membered : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v6\_metric\_1 X0) \wedge ((v7\_metric\_1 \\
 & X0) \wedge ((v8\_metric\_1 X0) \wedge (v9\_metric\_1 X0) \wedge (l1\_metric\_1 X0)))))) \Rightarrow \\
 & (\forall X1. ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
 & (u1\_struct\_0 (k3\_pcomps\_1 X0)))))) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 \\
 & X2) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 (k3\_pcomps\_1 X0)))))) \Rightarrow \\
 & (\forall X3. ((\neg v1\_xboole\_0 X3) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 \\
 & (u1\_struct\_0 (k3\_pcomps\_1 X0)))))) \Rightarrow (((v2\_compts\_1 X1 (k3\_pcomps\_1 \\
 & X0)) \wedge ((v2\_compts\_1 X2 (k3\_pcomps\_1 X0)) \wedge (v2\_compts\_1 X3 (k3\_pcomps\_1 \\
 & X0)))) \Rightarrow (r1\_xxreal\_0 (k8\_weierstr X0 X1 X3) (k7\_real\_1 (k1\_hausdorf \\
 & X0 X1 X2) (k1\_hausdorf X0 X2 X3))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. (v1\_xxreal\_0 X0) \Rightarrow (\forall X1. (v1\_xxreal\_0 X1) \Rightarrow (\forall X2. \\
 & (v1\_xxreal\_0 X2) \Rightarrow (((r1\_xxreal\_0 X0 X1) \wedge (r1\_xxreal\_0 X2 X1)) \Rightarrow \\
 & (r1\_xxreal\_0 (k4\_xxreal\_0 X0 X2) X1))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((m1\_subset\_1 X0 k1\_numbers) \wedge (m1\_subset\_1 \\
 & X1 k1\_numbers)) \Rightarrow (k2\_square\_1 X0 X1 = k4\_xxreal\_0 X0 X1)
 \end{aligned} \tag{3}$$

Assume the following.

$$v3\_membered\ k1\_numbers \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1 \\ & X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge \\ & (l1\_metric\_1\ X0))))))\wedge((m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))))\Rightarrow(m1\_subset\_1\ (k8\_weierstr\ X0\ X1\ X2)\ k1\_numbers) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k1\_numbers)\wedge(v1\_xreal\_0\ X1))\Rightarrow(m1\_subset\_1\ (k7\_real\_1\ X0\ X1)\ k1\_numbers) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1 \\ & X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge \\ & (l1\_metric\_1\ X0))))))\wedge((m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))))\Rightarrow(m1\_subset\_1\ (k1\_hausdorff\ X0\ X1\ X2)\ k1\_numbers) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v7\_metric\_1 \\ & X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))))\Rightarrow \\ & (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k3\_pcomps\_1 \\ & X0))))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))\Rightarrow(k1\_hausdorff\ X0\ X1\ X2 = k2\_square\_1\ (k8\_weierstr \\ & X0\ X1\ X2)\ (k8\_weierstr\ X0\ X2\ X1)))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k1\_numbers)\wedge(v1\_xreal\_0\ X1))\Rightarrow(k7\_real\_1\ X0\ X1 = k7\_real\_1\ X1\ X0) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1 \\ & X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge \\ & (l1\_metric\_1\ X0))))))\wedge((m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0 \\ & (k3\_pcomps\_1\ X0))))))\Rightarrow(k1\_hausdorff\ X0\ X1\ X2 = k1\_hausdorff\ X0\ X2 \\ & X1) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(v3\_membered\ X0)\Rightarrow(v2\_membered\ X0) \quad (11)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k1\_numbers)\Rightarrow(v1\_xreal\_0\ X0) \quad (12)$$

Assume the following.

$$\forall X0.(v2\_membered\ X0)\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ X0)\Rightarrow(v1\_xreal\_0\ X1)) \quad (13)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v7\_metric\_1 \\ & X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))))\Rightarrow \\ & (\forall X1.((\neg v1\_xboole\_0\ X1)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ (k3\_pcomps\_1\ X0))))))\Rightarrow(\forall X2.((\neg v1\_xboole\_0 \\ & X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k3\_pcomps\_1\ X0))))))\Rightarrow \\ & (\forall X3.((\neg v1\_xboole\_0\ X3)\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1 \\ & (u1\_struct\_0\ (k3\_pcomps\_1\ X0))))))\Rightarrow(((v2\_compts\_1\ X1\ (k3\_pcomps\_1 \\ & X0))\wedge((v2\_compts\_1\ X2\ (k3\_pcomps\_1\ X0))\wedge(v2\_compts\_1\ X3\ (k3\_pcomps\_1 \\ & X0))))\Rightarrow(r1\_xreal\_0\ (k1\_hausdorff\ X0\ X1\ X3)\ (k7\_real\_1\ (k1\_hausdorff \\ & X0\ X1\ X2)\ (k1\_hausdorff\ X0\ X2\ X3)))))) \end{aligned}$$