

t18\_hausdorf  
(TMcT8sxKCeDKoxCY1RGLvugiBZDoj1a2Unv)

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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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $v6\_tbsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_compts\_1 : \iota \Rightarrow o$  be given. Let  $v1\_tbsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $k1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v5\_tbsp\_1 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_topmetr : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_pre\_topc : \iota \Rightarrow \iota$  be given. Let  $k2\_pcomps\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_metric\_1 : \iota \Rightarrow o$  be given. Let  $m1\_topmetr : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_metric\_1 X0)) \Rightarrow (((v6\_metric\_1 X0) \wedge (v9\_metric\_1 X0) \wedge (v1\_compts\_1 (k3\_pcomps\_1 X0)))) \Rightarrow (v1\_tbsp\_1 X0)) \quad (1)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (u1\_struct\_0 (k1\_pre\_topc X0 X1) = X1)) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_subset\_1 X0 (k1\_zfmisc\_1 X1)) \Leftrightarrow (r1\_tarski X0 X1) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_pre\_topc X1 X0) \Rightarrow \\ & (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow \\ & ((r1\_tarski X2 (k2\_struct\_0 X1)) \Rightarrow ((v2\_compts\_1 X2 X0) \Leftrightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X1))) \Rightarrow ((X3 = X2) \Rightarrow (v2\_compts\_1 \\ & X3 X1)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow((v1\_compts\_1\ X0)\Leftrightarrow(v2\_compts\_1\ (k2\_struct\_0\ X0)\ X0)) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))\Rightarrow((v1\_tbsp\_1\ X0)\Rightarrow(v5\_tbsp\_1\ X0)) \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))))\Rightarrow \\ (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\Rightarrow \\ (\forall X2.((\neg v1\_xboole\_0\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k1\_topmetr\ X0\ X2))))\Rightarrow(((X1 = X3)\wedge(v6\_tbsp\_1\ X3\ (k1\_topmetr\ X0\ X2)))\Rightarrow(v6\_tbsp\_1\ X1\ X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))))\Rightarrow \\ (\forall X1.(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ (k3\_pcomps\_1\ X0))))\Rightarrow(\forall X2.((\neg v1\_xboole\_0\ X2)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((X1 = X2)\Rightarrow(k1\_pre\_topc\ (k3\_pcomps\_1\ X0\ X1 = k3\_pcomps\_1\ (k1\_topmetr\ X0\ X2)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(l1\_metric\_1\ X0)\Rightarrow((u1\_struct\_0\ X0 = u1\_struct\_0\ (k3\_pcomps\_1\ X0))\wedge(u1\_pre\_topc\ (k3\_pcomps\_1\ X0) = k2\_pcomps\_1\ X0)) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.r1\_tarski\ X0\ X0 \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v5\_tbsp\_1\ X0)\wedge(l1\_metric\_1\ X0)))\Rightarrow(v6\_tbsp\_1\ (k2\_struct\_0\ X0)\ X0) \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0\ X0)\wedge((v6\_metric\_1\ X0)\wedge((v7\_metric\_1\ X0)\wedge((v8\_metric\_1\ X0)\wedge((v9\_metric\_1\ X0)\wedge(l1\_metric\_1\ X0))))))\wedge((\neg v1\_xboole\_0\ X1)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow((\neg v2\_struct\_0\ (k1\_topmetr\ X0\ X1))\wedge(v1\_metric\_1\ (k1\_topmetr\ X0\ X1))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} \forall X0.((v6\_metric\_1 X0) \wedge ((v7\_metric\_1 X0) \wedge ((v8\_metric\_1 \\ X0) \wedge ((v9\_metric\_1 X0) \wedge (l1\_metric\_1 X0)))))) \Rightarrow (\forall X1.(m1\_topmetr \\ X1 X0) \Rightarrow ((v6\_metric\_1 X1) \wedge ((v7\_metric\_1 X1) \wedge ((v8\_metric\_1 X1) \wedge \\ ((v9\_metric\_1 X1) \wedge (l1\_metric\_1 X1))))))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_pre\_topc X1 X0) \Rightarrow (l1\_pre\_topc X1)) \quad (14)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (l1\_struct\_0 X0) \quad (15)$$

Assume the following.

$$\forall X0.(l1\_metric\_1 X0) \Rightarrow (l1\_struct\_0 X0) \quad (16)$$

Assume the following.

$$\forall X0.(l1\_metric\_1 X0) \Rightarrow (l1\_pre\_topc (k3\_pcomps\_1 X0)) \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge ((v6\_metric\_1 X0) \wedge \\ ((v7\_metric\_1 X0) \wedge ((v8\_metric\_1 X0) \wedge ((v9\_metric\_1 X0) \wedge (l1\_metric\_1 \\ X0)))))) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ X0)))))) \Rightarrow ((v1\_metric\_1 (k1\_topmetr X0 X1)) \wedge (m1\_topmetr (k1\_topmetr \\ X0 X1) X0)) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(((l1\_pre\_topc X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (u1\_struct\_0 X0)))) \Rightarrow ((v1\_pre\_topc (k1\_pre\_topc X0 X1)) \wedge (m1\_pre\_topc \\ (k1\_pre\_topc X0 X1) X0)) \end{aligned} \quad (19)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (k2\_struct\_0 X0 = u1\_struct\_0 X0) \quad (20)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_metric\_1 X0)) \Rightarrow (\forall X1. \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((v1\_xboole\_0 \\ X1) \Rightarrow (v6\_tbsp\_1 X1 X0))) \end{aligned} \quad (21)$$

**Theorem 1**

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