

# t42\_fintopo6

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_orders\_2 : \iota \Rightarrow o$  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  $v3\_orders\_2 : \iota \Rightarrow o$  be given. Let  $v1\_fin\_topo : \iota \Rightarrow o$  be given. Let  $v4\_fin\_topo : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_fintopo6 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_fintopo4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. r1\_tarski X0 (k2\_xboole\_0 X0 X1) \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge (l1\_orders\_2 X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X3. (r1\_fintopo4 X0 X1 X2 X3) \Rightarrow (r1\_xboole\_0 X1 X2)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((v1\_fin\_topo X0) \wedge ((v4\_fin\_topo X1 X0) \wedge (v4\_fin\_topo X2 X0))) \Rightarrow ((r1\_fintopo4 X0 X1 X2) \vee (v4\_fin\_topo (k4\_subset\_1 (u1\_struct\_0 X0) X1 X2) X0)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 X0))) \Rightarrow (k4\_subset\_1 X0 X1 X2 = k2\_xboole\_0 X1 X2) \tag{4}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 X0))) \Rightarrow (m1\_subset\_1 (k4\_subset\_1 X0 X1 X2) (k1\_zfmisc\_1 X0)) \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow ((r1\_fintopo6 \\ X0 X1) \Leftrightarrow ((v4\_fin\_topo X1 X0) \wedge (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ (u1\_struct\_0 X0))) \Rightarrow (((v4\_fin\_topo X2 X0) \wedge (r1\_tarski X1 X2)) \Rightarrow \\ (X1 = X2)))))) \end{aligned} \tag{6}$$

Assume the following.

$$\forall X0. \forall X1. k2\_xboole\_0 X0 X1 = k2\_xboole\_0 X1 X0 \tag{7}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((v3\_orders\_2 \\ X0) \wedge ((v1\_fin\_topo X0) \wedge (v4\_fin\_topo X1 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 \\ X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\neg(r1\_fintopo6 X0 X2) \wedge ((\neg \\ r1\_xboole\_0 X1 X2) \wedge (\neg r1\_tarski X1 X2)))))) \end{aligned}$$