

# t24\_fintopo6 (TMWU- siUi1VbKNecDq1bhjEyHYqsNBKw7Hep)

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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  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_fin\_topo : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_fintopo4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_fin\_topo : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. \neg(\neg r1\_xboole\_0 X0 X1) \wedge ((r1\_xboole\_0 X0 X2) \wedge (r1\_xboole\_0 X0 (k4\_xboole\_0 X1 X2))) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. (\neg(\neg r1\_xboole\_0 X0 X1) \wedge (\forall X2. \neg X2 \in k3\_xboole\_0 X0 X1)) \wedge (\neg(\exists X2. X2 \in k3\_xboole\_0 X0 X1) \wedge (r1\_xboole\_0 X0 X1)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \Rightarrow (\neg(X1 \neq k1\_xboole\_0) \wedge (\forall X2. (m1\_subset\_1 X2 X0) \Rightarrow (\neg X2 \in X1))) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. k2\_xboole\_0 X0 (k4\_xboole\_0 X1 X0) = k2\_xboole\_0 X0 X1 \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (k4\_xboole\_0 X0 X1 = k1\_xboole\_0) \Leftrightarrow (r1\_tarski X0 X1) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge (l1\_orders\_2 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))) \Rightarrow (k7\_fin\_topo X0 X1 = k7\_subset\_1 (u1\_struct\_0 X0) (k9\_fin\_topo \\ & X0 X1) X1)) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v3\_orders\_2 X0) \wedge (l1\_orders\_2 \\ & X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\ & X0))) \Rightarrow (r1\_tarski X1 (k9\_fin\_topo X0 X1))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski X0 X1) \Rightarrow (k2\_xboole\_0 X0 X1 = X1) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((r1\_tarski (k3\_xboole\_0 \\ & X0 X1) (k1\_tarski X3)) \wedge ((X3 \in X2) \wedge (r1\_xboole\_0 X2 X1))) \Rightarrow (r1\_xboole\_0 \\ & (k2\_xboole\_0 X0 X2) X1) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_xboole\_0 X0 X1) \Rightarrow (r1\_xboole\_0 X1 X0) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & X0)) \Rightarrow (k7\_subset\_1 X0 X1 X2 = k4\_xboole\_0 X1 X2) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 \\ & (k9\_fin\_topo X0 X1) (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (l1\_orders\_2 X0)) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 \\ & (k7\_fin\_topo X0 X1) (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \end{aligned} \quad (13)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_xboole\_0 X0 X1) \Leftrightarrow (k3\_xboole\_0 X0 X1 = k1\_xboole\_0) \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarSKI X0 X1)\Leftrightarrow(\forall X2.(X2 \in X0)\Rightarrow (X2 \in X1)) \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_orders\_2 X0))\Rightarrow(\forall X1. \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow(\forall X2. \\ (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow((r1\_fintopo4 \\ X0 X1 X2)\Leftrightarrow((r1\_xboole\_0 (k9\_fin\_topo X0 X1) X2)\wedge(r1\_xboole\_0 X1 \\ (k9\_fin\_topo X0 X2)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.\forall X1.(X0 = X1)\Leftrightarrow((r1\_tarSKI X0 X1)\wedge(r1\_tarSKI X1 X0)) \quad (17)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0)\wedge(l1\_orders\_2 X0))\Rightarrow(\forall X1. \\ (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow(\forall X2. \\ (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0)))\Rightarrow(((v3\_orders\_2 \\ X0)\wedge((r1\_xboole\_0 X1 X2)\wedge((r1\_xboole\_0 (k7\_fin\_topo X0 X1) X2)\wedge \\ (r1\_xboole\_0 (k7\_fin\_topo X0 X2) X1))))\Rightarrow(r1\_fintopo4 X0 X1 X2)))) \end{aligned}$$