

t40\_midsp\_1  
(TMdTuxxiiNK7uoA28kDhkGKzi6YFiU4psgh)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_midsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_midsp\_1 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k7\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $m1\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_midsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (k1\_xtuple\_0 (k4\_tarski X0 X1) = X0) \wedge (k2\_xtuple\_0 (k4\_tarski X0 X1) = X1) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow (k3\_domain\_1 X0 X1 X2 = k2\_xtuple\_0 X2) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge (m1\_subset\_1 X2 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow (k2\_domain\_1 X0 X1 X2 = k1\_xtuple\_0 X2) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge ((m1\_subset\_1 X2 X0) \wedge (m1\_subset\_1 X3 X1)))) \Rightarrow (k1\_domain\_1 X0 X1 X2 X3 = k4\_tarski X2 X3) \quad (4)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(l1\_midsp\_1 X0) \Rightarrow (l1\_struct\_0 X0) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge (v2\_midsp\_1 \\ & X0) \wedge (l1\_midsp\_1 X0))) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\ & X2 (u1\_struct\_0 X0))) \Rightarrow (m1\_midsp\_1 (k8\_midsp\_1 X0 X1 X2) X0) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge \\ & ((\neg v1\_xboole\_0 X1) \wedge ((m1\_subset\_1 X2 X0) \wedge (m1\_subset\_1 X3 X1)))) \Rightarrow \\ & (m1\_subset\_1 (k1\_domain\_1 X0 X1 X2 X3) (k2\_zfmisc\_1 X0 X1)) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0)) \Rightarrow (\forall X1.(m1\_midsp\_1 X1 X0) \Rightarrow (\forall X2.(m1\_midsp\_1 \\ & X2 X0) \Rightarrow (\forall X3.(m1\_midsp\_1 X3 X0) \Rightarrow ((X3 = k7\_midsp\_1 X0 X1 X2) \Leftrightarrow \\ & (\exists X4.(m1\_subset\_1 X4 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X0))) \wedge (\exists X5.(m1\_subset\_1 X5 (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X0)))) \wedge ((X1 = k5\_midsp\_1 X0 X4) \wedge ((X2 = k5\_midsp\_1 \\ & X0 X5) \wedge ((k3\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0) X4 = k2\_domain\_1 \\ & (u1\_struct\_0 X0) (u1\_struct\_0 X0) X5) \wedge (X3 = k5\_midsp\_1 X0 (k1\_domain\_1 \\ & (u1\_struct\_0 X0) (u1\_struct\_0 X0) (k2\_domain\_1 (u1\_struct\_0 X0) \\ & (u1\_struct\_0 X0) X4) (k3\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X0) X5)))))))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0)) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k8\_midsp\_1 X0 X1 X2 = k5\_midsp\_1 \\ & X0 (k1\_domain\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0) X1 X2)))) \end{aligned} \quad (10)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (v2\_midsp\_1 X0) \wedge (l1\_midsp\_1 \\ & X0)) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X0)) \Rightarrow (k7\_midsp\_1 X0 (k8\_midsp\_1 X0 X1 X2) (k8\_midsp\_1 \\ & X0 X2 X3) = k8\_midsp\_1 X0 X1 X3)))) \end{aligned}$$