

## t3\_mfold\_2

(TMMjDuPZ8kaefnHow6J7PmC5nprF262n6G)

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Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_tops\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_tops\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v5\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\ & (l1\_pre\_topc X1)) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow ((v3\_tops\_2 \\ & X2 X0 X1) \Rightarrow (v3\_tops\_2 (k2\_tops\_2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X1) X2) X1 X0)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(l1\_pre\_topc X1) \Rightarrow (( \\ & \exists X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) \\ & (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \wedge (v3\_tops\_2 X2 X0 X1)) \Rightarrow \\ & ((v2\_struct\_0 X0) \Leftrightarrow (v2\_struct\_0 X1)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge (( \\ & v1\_funct\_2 X1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))) \Rightarrow \\ & ((v2\_struct\_0 X0) \Rightarrow (v3\_tops\_2 X1 X0 X0))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.((v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (v1\_xboole\_0 (k2\_struct\_0 X0)) \quad (5)$$

Assume the following.

$$\forall X0.((v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (l1\_struct\_0 X0) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow \\ & ((v1\_funct\_1 (k2\_tops\_2 X0 X1 X2)) \wedge ((v1\_funct\_2 (k2\_tops\_2 X0 \\ & X1 X2) X1 X0) \wedge (m1\_subset\_1 (k2\_tops\_2 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X1 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(l1\_pre\_topc X1) \Rightarrow (\forall X2. \\ & ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 \\ & X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X0) (u1\_struct\_0 X1)))))) \Rightarrow ((v3\_tops\_2 X2 X0 X1) \Leftrightarrow ((k1\_relset\_1 \\ & (u1\_struct\_0 X0) X2 = k2\_struct\_0 X0) \wedge ((k2\_relset\_1 (u1\_struct\_0 \\ & X1) X2 = k2\_struct\_0 X1) \wedge ((v2\_funct\_1 X2) \wedge ((v5\_pre\_topc X2 X0 X1) \wedge \\ & (v5\_pre\_topc (k2\_tops\_2 (u1\_struct\_0 X0) (u1\_struct\_0 X1) X2) \\ & X1 X0))))))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (k2\_struct\_0 X0 = u1\_struct\_0 X0) \quad (10)$$

Assume the following.

$$k1\_xboole\_0 = the (\lambda X0 : \iota.v1\_xboole\_0 X0) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 X1))) \Rightarrow (((X1 \neq k1\_xboole\_0) \Rightarrow ((v1\_funct\_2 X2 X0 \\ & X1) \Leftrightarrow (X0 = k1\_relset\_1 X0 X2))) \wedge ((X1 = k1\_xboole\_0) \Rightarrow ((v1\_funct\_2 \\ & X2 X0 X1) \Leftrightarrow (X2 = k1\_xboole\_0)))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((l1\_pre\_topc\ X0) \wedge (l1\_pre\_topc\ X1)) \Rightarrow ( \\
& \quad \forall X2. (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0 \\
& \quad X0)\ (u1\_struct\_0\ X1)))) \Rightarrow (((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2\ X2\ (u1\_struct\_0 \\
& \quad X0)\ (u1\_struct\_0\ X1)) \wedge (v3\_tops\_2\ X2\ X0\ X1))) \Rightarrow ((v1\_funct\_1\ X2) \wedge \\
& \quad ((v2\_funct\_1\ X2) \wedge ((v1\_funct\_2\ X2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0 \\
& \quad X1)) \wedge (v2\_funct\_2\ X2\ (u1\_struct\_0\ X1)) \wedge (v5\_pre\_topc\ X2\ X0\ X1)))))) \\
& \hspace{15em} (13)
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. (l1\_pre\_topc\ X0) \Rightarrow (\forall X1. (l1\_pre\_topc\ X1) \Rightarrow (\forall X2. \\
& \quad ((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2\ X2\ (u1\_struct\_0\ X0)\ (u1\_struct\_0 \\
& \quad X1)) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0 \\
& \quad X0)\ (u1\_struct\_0\ X1)))))) \Rightarrow ((v3\_tops\_2\ X2\ X0\ X1) \Rightarrow (v3\_tops\_2\ (k2\_tops\_2 \\
& \quad (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1)\ X2)\ X1\ X0))))
\end{aligned}$$