

# t127\_tmap\_1

## (TMYTtfsTJ7ECs8qGrRxFySo4rdgSAktNCxG)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v2\_pre\_topc : \iota \Rightarrow o$  be given. Let  $l1\_pre\_topc : \iota \Rightarrow o$  be given. Let  $m1\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $r1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_tmap\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_tmap\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_tmap\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1)))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0))) \Rightarrow ( \\
& \forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X2) \\
& (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X2) (u1\_struct\_0 X1)))))) \Rightarrow (r2\_funct\_2 (u1\_struct\_0 \\
& X2) (u1\_struct\_0 X1) X3 (k3\_tmap\_1 X0 X1 X2 X2 X3))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1)))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X1))) \Rightarrow ( \\
& \forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X2) \\
& (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X2) (u1\_struct\_0 X0)))))) \Rightarrow (\exists X4.((v1\_funct\_1 \\
& X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 X1) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\
& X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X0)))))) \wedge \\
& (r2\_funct\_2 (u1\_struct\_0 X2) (u1\_struct\_0 X0) (k2\_tmap\_1 X1 X0 \\
& X4 X2) X3))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (m1\_pre\_topc X0 X0) \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ( \\
& \forall X3.((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow (\forall X4. \\
& ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 (k1\_tsep\_1 X0 X2 \\
& X3)) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1)))))) \Rightarrow (r2\_funct\_2 \\
& (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1) X4 (k10\_tmap\_1 \\
& X0 X1 X2 X3 (k3\_tmap\_1 X0 X1 (k1\_tsep\_1 X0 X2 X3) X2 X4) (k3\_tmap\_1 X0 \\
& X1 (k1\_tsep\_1 X0 X2 X3) X3 X4))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge \\
& ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\
& X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\
& X3) \Leftrightarrow (X2 = X3))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& ((\neg v1\_xboole\_0 X1) \wedge ((\neg v1\_xboole\_0 X3) \wedge (((v1\_funct\_1 X4) \wedge (( \\
& v1\_funct\_2 X4 X0 X1) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))))) \wedge ((v1\_funct\_1 X5) \wedge ((v1\_funct\_2 X5 X2 X3) \wedge (m1\_subset\_1 \\
& X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X2 X3)))))) \Rightarrow ((r1\_funct\_2 X0 X1 \\
& X2 X3 X4 X5) \Leftrightarrow (X4 = X5))
\end{aligned} \tag{6}$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \tag{7}$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow (\forall X1. (m1\_pre\_topc X1 X0) \Rightarrow (l1\_pre\_topc X1)) \tag{8}$$

Assume the following.

$$\forall X0. (l1\_pre\_topc X0) \Rightarrow (l1\_struct\_0 X0) \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((\neg v2\_struct\_0 \\
& X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\wedge(((\neg v2\_struct\_0\ X1)\wedge \\
& ((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1)))\wedge((m1\_pre\_topc\ X2\ X0)\wedge( \\
& (m1\_pre\_topc\ X3\ X0)\wedge((v1\_funct\_1\ X4)\wedge((v1\_funct\_2\ X4\ (u1\_struct\_0 \\
& X2)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1 \\
& (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X1))))))))))\Rightarrow((v1\_funct\_1\ (k3\_tmap\_1 \\
& X0\ X1\ X2\ X3\ X4))\wedge((v1\_funct\_2\ (k3\_tmap\_1\ X0\ X1\ X2\ X3\ X4)\ (u1\_struct\_0 \\
& X3)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ (k3\_tmap\_1\ X0\ X1\ X2\ X3\ X4)\ (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1\ (u1\_struct\_0\ X3)\ (u1\_struct\_0\ X1))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.((l1\_struct\_0\ X0)\wedge \\
& ((l1\_struct\_0\ X1)\wedge(((v1\_funct\_1\ X2)\wedge((v1\_funct\_2\ X2\ (u1\_struct\_0 \\
& X0)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1 \\
& (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X1))))))\wedge(l1\_struct\_0\ X3))))\Rightarrow \\
& ((v1\_funct\_1\ (k2\_tmap\_1\ X0\ X1\ X2\ X3))\wedge((v1\_funct\_2\ (k2\_tmap\_1 \\
& X0\ X1\ X2\ X3)\ (u1\_struct\_0\ X3)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ (k2\_tmap\_1 \\
& X0\ X1\ X2\ X3)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X3)\ (u1\_struct\_0 \\
& X1))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\wedge( \\
& ((\neg v2\_struct\_0\ X1)\wedge((v2\_pre\_topc\ X1)\wedge(l1\_pre\_topc\ X1)))\wedge(( \\
& (\neg v2\_struct\_0\ X2)\wedge(m1\_pre\_topc\ X2\ X0))\wedge(((\neg v2\_struct\_0\ X3)\wedge \\
& (m1\_pre\_topc\ X3\ X0))\wedge(((v1\_funct\_1\ X4)\wedge((v1\_funct\_2\ X4\ (u1\_struct\_0 \\
& X2)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1 \\
& (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X1))))))\wedge((v1\_funct\_1\ X5)\wedge((v1\_funct\_2 \\
& X5\ (u1\_struct\_0\ X3)\ (u1\_struct\_0\ X1))\wedge(m1\_subset\_1\ X5\ (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1\ (u1\_struct\_0\ X3)\ (u1\_struct\_0\ X1))))))))))\Rightarrow(( \\
& v1\_funct\_1\ (k10\_tmap\_1\ X0\ X1\ X2\ X3\ X4\ X5))\wedge((v1\_funct\_2\ (k10\_tmap\_1 \\
& X0\ X1\ X2\ X3\ X4\ X5)\ (u1\_struct\_0\ (k1\_tsep\_1\ X0\ X2\ X3))\ (u1\_struct\_0 \\
& X1))\wedge(m1\_subset\_1\ (k10\_tmap\_1\ X0\ X1\ X2\ X3\ X4\ X5)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1 \\
& (u1\_struct\_0\ (k1\_tsep\_1\ X0\ X2\ X3))\ (u1\_struct\_0\ X1))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1)))) \Rightarrow (\forall X2.(m1\_pre\_topc X2 X0) \Rightarrow (\forall X3.(m1\_pre\_topc \\
& X3 X0) \Rightarrow (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 \\
& X2) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X2) (u1\_struct\_0 X1)))))) \Rightarrow ((m1\_pre\_topc X3 X2) \Rightarrow \\
& (k3\_tmap\_1 X0 X1 X2 X3 X4 = k2\_partfun1 (u1\_struct\_0 X2) (u1\_struct\_0 \\
& X1) X4 (u1\_struct\_0 X3))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1)))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (\forall X3.(m1\_pre\_topc \\
& X3 X0) \Rightarrow (k2\_tmap\_1 X0 X1 X2 X3 = k2\_partfun1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X1) X2 (u1\_struct\_0 X3))))
\end{aligned} \tag{14}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1)))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ( \\
& \forall X3.((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow ((X0 = k1\_tsep\_1 \\
& X0 X2 X3) \Rightarrow (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)))))) \Rightarrow (r1\_funct\_2 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1) (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 \\
& X1) X4 (k10\_tmap\_1 X0 X1 X2 X3 (k2\_tmap\_1 X0 X1 X4 X2) (k2\_tmap\_1 X0 \\
& X1 X4 X3))))))
\end{aligned}$$