

## t138\_tmap\_1

(TMK7JHxnMYuTH9irAjEWdMWZ8sy8XCf4zRR)

October 27, 2020

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  $r3\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $v5\_pre\_topc : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_tmap\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r4\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_tmap\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \Rightarrow ( \\ & \forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow (((r1\_tsep\_1 \\ & X1 X2) \wedge (r4\_tsep\_1 X0 X1 X2)) \Leftrightarrow (r3\_tsep\_1 X0 X1 X2)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\ & X1))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ( \\ & \forall X3.((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow ((r1\_tsep\_1 \\ & X2 X3) \Rightarrow (\forall X4.((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 \\ & X2) (u1\_struct\_0 X1)) \wedge ((v5\_pre\_topc X4 X2 X1) \wedge (m1\_subset\_1 X4 \\ & (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X2) (u1\_struct\_0 X1)))))) \Rightarrow \\ & (\forall X5.((v1\_funct\_1 X5) \wedge ((v1\_funct\_2 X5 (u1\_struct\_0 X3) \\ & (u1\_struct\_0 X1)) \wedge ((v5\_pre\_topc X5 X3 X1) \wedge (m1\_subset\_1 X5 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X3) (u1\_struct\_0 X1)))))) \Rightarrow ((r4\_tsep\_1 \\ & X0 X2 X3) \Rightarrow ((v1\_funct\_1 (k10\_tmap\_1 X0 X1 X2 X3 X4 X5)) \wedge ((v1\_funct\_2 \\ & (k10\_tmap\_1 X0 X1 X2 X3 X4 X5) (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) ( \\ & u1\_struct\_0 X1)) \wedge ((v5\_pre\_topc (k10\_tmap\_1 X0 X1 X2 X3 X4 X5) (k1\_tsep\_1 \\ & X0 X2 X3) X1) \wedge (m1\_subset\_1 (k10\_tmap\_1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1))))))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v2\_pre\_topc X1) \wedge (l1\_pre\_topc \\
& X1))) \Rightarrow (\forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ( \\
& \forall X3.((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow (\forall X4. \\
& ((v1\_funct\_1 X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 (k1\_tsep\_1 X0 X2 \\
& X3)) (u1\_struct\_0 X1)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1)))))) \Rightarrow (r2\_funct\_2 \\
& (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1) X4 (k10\_tmap\_1 \\
& X0 X1 X2 X3 (k3\_tmap\_1 X0 X1 (k1\_tsep\_1 X0 X2 X3) X2 X4) (k3\_tmap\_1 X0 \\
& X1 (k1\_tsep\_1 X0 X2 X3) X3 X4))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \Rightarrow ( \\
& \forall X2.((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ((r3\_tsep\_1 \\
& X0 X1 X2) \Leftrightarrow ((r1\_tsep\_1 X1 X2) \wedge (\forall X3.((\neg v2\_struct\_0 X3) \wedge ( \\
& (v2\_pre\_topc X3) \wedge (l1\_pre\_topc X3)))) \Rightarrow (\forall X4.((v1\_funct\_1 \\
& X4) \wedge ((v1\_funct\_2 X4 (u1\_struct\_0 (k1\_tsep\_1 X0 X1 X2)) (u1\_struct\_0 \\
& X3)) \wedge (m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& (k1\_tsep\_1 X0 X1 X2)) (u1\_struct\_0 X3)))))) \Rightarrow (((v1\_funct\_1 (k3\_tmap\_1 \\
& X0 X3 (k1\_tsep\_1 X0 X1 X2) X1 X4) \wedge ((v1\_funct\_2 (k3\_tmap\_1 X0 X3 ( \\
& k1\_tsep\_1 X0 X1 X2) X1 X4) (u1\_struct\_0 X1) (u1\_struct\_0 X3)) \wedge ( \\
& v5\_pre\_topc (k3\_tmap\_1 X0 X3 (k1\_tsep\_1 X0 X1 X2) X1 X4) X1 X3) \wedge (m1\_subset\_1 \\
& (k3\_tmap\_1 X0 X3 (k1\_tsep\_1 X0 X1 X2) X1 X4) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X1) (u1\_struct\_0 X3)))))) \wedge ((v1\_funct\_1 (k3\_tmap\_1 \\
& X0 X3 (k1\_tsep\_1 X0 X1 X2) X2 X4) \wedge ((v1\_funct\_2 (k3\_tmap\_1 X0 X3 ( \\
& k1\_tsep\_1 X0 X1 X2) X2 X4) (u1\_struct\_0 X2) (u1\_struct\_0 X3)) \wedge ( \\
& v5\_pre\_topc (k3\_tmap\_1 X0 X3 (k1\_tsep\_1 X0 X1 X2) X2 X4) X2 X3) \wedge (m1\_subset\_1 \\
& (k3\_tmap\_1 X0 X3 (k1\_tsep\_1 X0 X1 X2) X2 X4) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X2) (u1\_struct\_0 X3)))))) \Rightarrow ((v1\_funct\_1 X4) \wedge ( \\
& (v1\_funct\_2 X4 (u1\_struct\_0 (k1\_tsep\_1 X0 X1 X2)) (u1\_struct\_0 \\
& X3)) \wedge ((v5\_pre\_topc X4 (k1\_tsep\_1 X0 X1 X2) X3) \wedge (m1\_subset\_1 X4 \\
& (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 (k1\_tsep\_1 X0 X1 X2)) ( \\
& u1\_struct\_0 X3))))))))))
\end{aligned} \tag{4}$$

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.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5. \\
& (((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc X0)))\wedge \\
& ((\neg v2\_struct\_0 X1)\wedge((v2\_pre\_topc X1)\wedge(l1\_pre\_topc X1)))\wedge(( \\
& (\neg v2\_struct\_0 X2)\wedge(m1\_pre\_topc X2 X0))\wedge(((\neg v2\_struct\_0 X3)\wedge \\
& (m1\_pre\_topc X3 X0))\wedge(((v1\_funct\_1 X4)\wedge((v1\_funct\_2 X4 (u1\_struct\_0 \\
& X2) (u1\_struct\_0 X1))\wedge(m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X2) (u1\_struct\_0 X1))))))\wedge((v1\_funct\_1 X5)\wedge((v1\_funct\_2 \\
& X5 (u1\_struct\_0 X3) (u1\_struct\_0 X1))\wedge(m1\_subset\_1 X5 (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X3) (u1\_struct\_0 X1))))))))))\Rightarrow(( \\
& v1\_funct\_1 (k10\_tmap\_1 X0 X1 X2 X3 X4 X5)\wedge((v1\_funct\_2 (k10\_tmap\_1 \\
& X0 X1 X2 X3 X4 X5) (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 \\
& X1))\wedge(m1\_subset\_1 (k10\_tmap\_1 X0 X1 X2 X3 X4 X5) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 (k1\_tsep\_1 X0 X2 X3)) (u1\_struct\_0 X1))))))
\end{aligned} \tag{6}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((v2\_pre\_topc X0)\wedge(l1\_pre\_topc \\
& X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0 X1)\wedge(m1\_pre\_topc X1 X0))\Rightarrow( \\
& \forall X2.((\neg v2\_struct\_0 X2)\wedge(m1\_pre\_topc X2 X0))\Rightarrow((r3\_tsep\_1 \\
& X0 X1 X2)\Leftrightarrow((r1\_tsep\_1 X1 X2)\wedge(\forall X3.((\neg v2\_struct\_0 X3)\wedge( \\
& (v2\_pre\_topc X3)\wedge(l1\_pre\_topc X3)))\Rightarrow(\forall X4.((v1\_funct\_1 \\
& X4)\wedge((v1\_funct\_2 X4 (u1\_struct\_0 X1) (u1\_struct\_0 X3))\wedge((v5\_pre\_topc \\
& X4 X1 X3)\wedge(m1\_subset\_1 X4 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X3))))))\Rightarrow(\forall X5.((v1\_funct\_1 X5)\wedge((v1\_funct\_2 \\
& X5 (u1\_struct\_0 X2) (u1\_struct\_0 X3))\wedge((v5\_pre\_topc X5 X2 X3)\wedge \\
& (m1\_subset\_1 X5 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X2) (u1\_struct\_0 \\
& X3))))))\Rightarrow((v1\_funct\_1 (k10\_tmap\_1 X0 X3 X1 X2 X4 X5)\wedge((v1\_funct\_2 \\
& (k10\_tmap\_1 X0 X3 X1 X2 X4 X5) (u1\_struct\_0 (k1\_tsep\_1 X0 X1 X2)) ( \\
& u1\_struct\_0 X3))\wedge((v5\_pre\_topc (k10\_tmap\_1 X0 X3 X1 X2 X4 X5) (k1\_tsep\_1 \\
& X0 X1 X2) X3)\wedge(m1\_subset\_1 (k10\_tmap\_1 X0 X3 X1 X2 X4 X5) (k1\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 (k1\_tsep\_1 X0 X1 X2)) (u1\_struct\_0 X3))))))))))
\end{aligned}$$