

# t47\_tsep\_2 (TMdSFTBVMnwqDDDtiPz- Tow7hyTzLDByenfj)

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  $r1\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r4\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\
& X0))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 \\
& X0)))) \Rightarrow (\forall X3.((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow ( \\
& \forall X4.(m1\_subset\_1 X4 (k1\_zfmisc\_1 (u1\_struct\_0 X3))) \Rightarrow ( \\
& \forall X5.(m1\_subset\_1 X5 (k1\_zfmisc\_1 (u1\_struct\_0 X3))) \Rightarrow ( \\
& ((X4 = k9\_subset\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X3) X1) \wedge ((X5 = \\
& k9\_subset\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X3) X2) \wedge (r2\_tsep\_1 \\
& X0 X1 X2))) \Rightarrow (r2\_tsep\_1 X3 X4 X5))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_pre\_topc X1 X0) \Rightarrow (m1\_subset\_1 (u1\_struct\_0 X1) (k1\_zfmisc\_1 (u1\_struct\_0 X0)))) \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 X0)) \Rightarrow (k9\_subset\_1 X0 X1 X2 = k3\_xboole\_0 X1 X2) \tag{3}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc X0) \Rightarrow (\forall X1.(m1\_pre\_topc X1 X0) \Rightarrow (l1\_pre\_topc X1)) \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (l1\_pre\_topc \\ & X0)) \wedge (((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \wedge ((\neg v2\_struct\_0 \\ & X2) \wedge (m1\_pre\_topc X2 X0)))) \Rightarrow ((\neg v2\_struct\_0 (k2\_tsep\_1 X0 X1 X2)) \wedge \\ & ((v1\_pre\_topc (k2\_tsep\_1 X0 X1 X2)) \wedge (m1\_pre\_topc (k2\_tsep\_1 X0 \\ & X1 X2) X0))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1\_pre\_topc X0) \Rightarrow (\forall X1. (m1\_pre\_topc X1 X0) \Rightarrow \\ & (\forall X2. (m1\_pre\_topc X2 X0) \Rightarrow ((r4\_tsep\_1 X0 X1 X2) \Leftrightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X4. \\ & (m1\_subset\_1 X4 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((X3 = u1\_struct\_0 \\ & X1) \wedge (X4 = u1\_struct\_0 X2)) \Rightarrow (r2\_tsep\_1 X0 X3 X4)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 \\ & X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow ((\neg r1\_tsep\_1 X1 X2) \Rightarrow (\forall X3. ((\neg \\ & v2\_struct\_0 X3) \wedge ((v1\_pre\_topc X3) \wedge (m1\_pre\_topc X3 X0))) \Rightarrow ((X3 = \\ & k2\_tsep\_1 X0 X1 X2) \Leftrightarrow (u1\_struct\_0 X3 = k3\_xboole\_0 (u1\_struct\_0 \\ & X1) (u1\_struct\_0 X2)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. k3\_xboole\_0 X0 X1 = k3\_xboole\_0 X1 X0 \quad (8)$$

**Theorem 1**

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v2\_pre\_topc X0) \wedge (l1\_pre\_topc \\ & X0))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge (m1\_pre\_topc X1 X0)) \Rightarrow ( \\ & \forall X2. ((\neg v2\_struct\_0 X2) \wedge (m1\_pre\_topc X2 X0)) \Rightarrow (\forall X3. \\ & ((\neg v2\_struct\_0 X3) \wedge (m1\_pre\_topc X3 X0)) \Rightarrow (\neg(\neg r1\_tsep\_1 X2 X1) \wedge \\ & ((\neg r1\_tsep\_1 X3 X1) \wedge (\exists X4. (m1\_pre\_topc X4 X1) \wedge (\exists X5. \\ & (m1\_pre\_topc X5 X1) \wedge ((X4 = k2\_tsep\_1 X0 X2 X1) \wedge ((X5 = k2\_tsep\_1 X0 \\ & X3 X1) \wedge ((r4\_tsep\_1 X0 X2 X3) \wedge (\neg r4\_tsep\_1 X1 X4 X5)))))))))) \end{aligned}$$