

## t65\_tsep\_1

(TMHumcg7R8aVHcUoxbuxnwe5YWwSDsdruSm)

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  $k1\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r3\_tsep\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_borsuk\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $k2\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_connsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_pre\_topc : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_pre\_topc : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (\forall X2. \\ & (m1\_subset\_1 X2 (k1\_zfmisc\_1 (u1\_struct\_0 X0))) \Rightarrow (((k2\_struct\_0 \\ & X0 = k4\_subset\_1 (u1\_struct\_0 X0) X1 X2) \wedge (r1\_connsp\_1 X0 X1 X2)) \Rightarrow \\ & ((v3\_pre\_topc X1 X0) \wedge ((v4\_pre\_topc X1 X0) \wedge ((v3\_pre\_topc X2 X0) \wedge \\ & (v4\_pre\_topc X2 X0))))))))) \end{aligned} \tag{1}$$

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.

$$\begin{aligned} & \forall X0.((v2\_pre\_topc X0) \wedge (l1\_pre\_topc X0)) \Rightarrow (\forall X1. \\ & (m1\_pre\_topc X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (u1\_struct\_0 X0))) \Rightarrow ((X2 = u1\_struct\_0 X1) \Rightarrow (((v1\_borsuk\_1 X1 X0) \wedge \\ & (m1\_pre\_topc X1 X0)) \Leftrightarrow (v4\_pre\_topc X2 X0)))))) \end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 X0))) \Rightarrow (k4\_subset\_1 X0 X1 X2 = k2\_xboole\_0 X1 X2) \tag{4}$$

Assume the following.

$$\forall X0.(l1\_pre\_topc\ X0)\Rightarrow(l1\_struct\_0\ X0) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0)\wedge(l1\_pre\_topc\ X0))\wedge(((\neg v2\_struct\_0\ X1)\wedge(m1\_pre\_topc\ X1\ X0))\wedge((\neg v2\_struct\_0\ X2)\wedge(m1\_pre\_topc\ X2\ X0))))\Rightarrow((\neg v2\_struct\_0\ (k1\_tsep\_1\ X0\ X1\ X2))\wedge \\ ((v1\_pre\_topc\ (k1\_tsep\_1\ X0\ X1\ X2))\wedge(m1\_pre\_topc\ (k1\_tsep\_1\ X0\ X1\ X2)\ X0))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1\_pre\_topc\ X0)\Rightarrow(\forall X1.(m1\_pre\_topc\ X1\ X0)\Rightarrow \\ (\forall X2.(m1\_pre\_topc\ X2\ X0)\Rightarrow((r3\_tsep\_1\ X0\ X1\ X2)\Leftrightarrow(\forall X3. \\ (m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(\forall X4. \\ (m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))))\Rightarrow(((X3 = u1\_struct\_0\ X1)\wedge(X4 = u1\_struct\_0\ X2))\Rightarrow(r1\_connsp\_1\ X0\ X3\ X4)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(l1\_struct\_0\ X0)\Rightarrow(k2\_struct\_0\ X0 = u1\_struct\_0\ X0) \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_pre\_topc\ X0))\Rightarrow(\forall X1. \\ ((\neg v2\_struct\_0\ X1)\wedge(m1\_pre\_topc\ X1\ X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge(m1\_pre\_topc\ X2\ X0))\Rightarrow(\forall X3.((\neg v2\_struct\_0\ X3)\wedge((v1\_pre\_topc\ X3)\wedge(m1\_pre\_topc\ X3\ X0))\Rightarrow((X3 = k1\_tsep\_1\ X0\ X1\ X2)\Leftrightarrow(u1\_struct\_0\ X3 = k2\_xboole\_0\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)))))) \end{aligned} \quad (9)$$

### Theorem 1

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0\ X0)\wedge((v2\_pre\_topc\ X0)\wedge(l1\_pre\_topc\ X0)))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(m1\_pre\_topc\ X1\ X0))\Rightarrow( \\ \forall X2.((\neg v2\_struct\_0\ X2)\wedge(m1\_pre\_topc\ X2\ X0))\Rightarrow(((X0 = k1\_tsep\_1\ X0\ X1\ X2)\wedge(r3\_tsep\_1\ X0\ X1\ X2))\Rightarrow((v1\_borsuk\_1\ X1\ X0)\wedge(m1\_pre\_topc\ X1\ X0)))))) \end{aligned}$$