

t92_tsep_1 (TMFytqKcN- mmb9ngihWx4tRt8kW9N2BrDaVh)

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 $r4_tsep_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k1_tsep_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_tsep_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $r1_connsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_tsep_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_xboole_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_subset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ & X0))) \Rightarrow (\forall X1.((v1_tsep_1 X1 X0) \wedge (m1_pre_topc X1 X0)) \Rightarrow (\forall X2. \\ & ((v1_tsep_1 X2 X0) \wedge (m1_pre_topc X2 X0)) \Rightarrow (r4_tsep_1 X0 X1 X2))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_pre_topc X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 \\ & (u1_struct_0 X0))) \Rightarrow (\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ & (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_zfmisc_1 \\ & (u1_struct_0 X0))) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_zfmisc_1 \\ & (u1_struct_0 X0))) \Rightarrow (((r1_connsp_1 X0 X1 X2) \wedge ((r1_tarski X3 X1) \wedge \\ & (r1_tarski X4 X2))) \Rightarrow (r1_connsp_1 X0 X3 X4)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ & X0))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge (m1_pre_topc X1 X0)) \Rightarrow (\\ & \forall X2.((\neg v2_struct_0 X2) \wedge (m1_pre_topc X2 X0)) \Rightarrow (((r1_tsep_1 \\ & X1 X2) \wedge (r4_tsep_1 X0 X1 X2)) \Leftrightarrow (r3_tsep_1 X0 X1 X2)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ X0))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge (m1_pre_topc X1 X0)) \Rightarrow (\\ \forall X2.((\neg v2_struct_0 X2) \wedge (m1_pre_topc X2 X0)) \Rightarrow ((r3_tsep_1 \\ X0 X1 X2) \Leftrightarrow (\exists X3.((\neg v2_struct_0 X3) \wedge ((v1_tsep_1 X3 X0) \wedge (\\ m1_pre_topc X3 X0))) \wedge (\exists X4.((\neg v2_struct_0 X4) \wedge ((v1_tsep_1 \\ X4 X0) \wedge (m1_pre_topc X4 X0))) \wedge ((m1_pre_topc X1 X3) \wedge ((m1_pre_topc \\ X2 X4) \wedge ((r1_tsep_1 X3 X4) \vee (r1_tsep_1 (k2_tsep_1 X0 X3 X4) (k1_tsep_1 \\ X0 X1 X2)))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\ X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (u1_struct_0 \\ X0))) \Rightarrow (\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 (u1_struct_0 \\ X0))) \Rightarrow ((r1_connsp_1 X0 X1 X2) \Leftrightarrow (\exists X3.(m1_subset_1 X3 (k1_zfmisc_1 \\ (u1_struct_0 X0))) \wedge (\exists X4.(m1_subset_1 X4 (k1_zfmisc_1 \\ (u1_struct_0 X0))) \wedge ((r2_tsep_1 X0 X3 X4) \wedge ((r1_tarSKI X1 X3) \wedge (\\ (r1_tarSKI X2 X4) \wedge (r1_xboole_0 (k9_subset_1 (u1_struct_0 X0) \\ X3 X4) (k4_subset_1 (u1_struct_0 X0) X1 X2)))))))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.((v2_pre_topc X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\ (m1_pre_topc X1 X0) \Rightarrow (\forall X2.(m1_pre_topc X2 X0) \Rightarrow ((r1_tarSKI \\ (u1_struct_0 X1) (u1_struct_0 X2)) \Leftrightarrow (m1_pre_topc X1 X2)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_pre_topc X0) \Rightarrow (\forall X1.(m1_pre_topc X1 X0) \Rightarrow \\ (m1_subset_1 (u1_struct_0 X1) (k1_zfmisc_1 (u1_struct_0 X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ X0)) \Rightarrow (k9_subset_1 X0 X1 X2 = k3_xboole_0 X1 X2) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.((m1_subset_1 X1 (k1_zfmisc_1 \\ X0)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 X0))) \Rightarrow (k4_subset_1 X0 X1 X2 = \\ k2_xboole_0 X1 X2) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.(l1_pre_topc X0) \Rightarrow (\forall X1.(m1_pre_topc X1 X0) \Rightarrow \\ (l1_pre_topc X1)) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.(l1_pre_topc\ X0)\Rightarrow(l1_struct_0\ X0) \quad (11)$$

Assume the following.

$$\begin{aligned} &\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0\ X0)\wedge(l1_pre_topc\ X0))\wedge(((\neg v2_struct_0\ X1)\wedge(m1_pre_topc\ X1\ X0))\wedge((\neg v2_struct_0\ X2)\wedge(m1_pre_topc\ X2\ X0))))\Rightarrow((\neg v2_struct_0\ (k2_tsep_1\ X0\ X1\ X2))\wedge \\ &((v1_pre_topc\ (k2_tsep_1\ X0\ X1\ X2))\wedge(m1_pre_topc\ (k2_tsep_1\ X0\ X1\ X2)\ X0))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} &\forall X0.\forall X1.\forall X2.(((\neg v2_struct_0\ X0)\wedge(l1_pre_topc\ X0))\wedge(((\neg v2_struct_0\ X1)\wedge(m1_pre_topc\ X1\ X0))\wedge((\neg v2_struct_0\ X2)\wedge(m1_pre_topc\ X2\ X0))))\Rightarrow((\neg v2_struct_0\ (k1_tsep_1\ X0\ X1\ X2))\wedge \\ &((v1_pre_topc\ (k1_tsep_1\ X0\ X1\ X2))\wedge(m1_pre_topc\ (k1_tsep_1\ X0\ X1\ X2)\ X0))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} &\forall X0.(l1_pre_topc\ X0)\Rightarrow(\forall X1.(m1_pre_topc\ X1\ X0)\Rightarrow \\ &(\forall X2.(m1_pre_topc\ X2\ X0)\Rightarrow((r4_tsep_1\ X0\ X1\ X2)\Leftrightarrow(\forall X3. \\ &(m1_subset_1\ X3\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(\forall X4. \\ &(m1_subset_1\ X4\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(((X3 = u1_struct_0\ X1)\wedge(X4 = u1_struct_0\ X2))\Rightarrow(r2_tsep_1\ X0\ X3\ X4)))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} &\forall X0.(l1_pre_topc\ X0)\Rightarrow(\forall X1.(m1_pre_topc\ X1\ X0)\Rightarrow \\ &(\forall X2.(m1_pre_topc\ X2\ X0)\Rightarrow((r3_tsep_1\ X0\ X1\ X2)\Leftrightarrow(\forall X3. \\ &(m1_subset_1\ X3\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(\forall X4. \\ &(m1_subset_1\ X4\ (k1_zfmisc_1\ (u1_struct_0\ X0))))\Rightarrow(((X3 = u1_struct_0\ X1)\wedge(X4 = u1_struct_0\ X2))\Rightarrow(r1_connsp_1\ X0\ X3\ X4)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} &\forall X0.((\neg v2_struct_0\ X0)\wedge(l1_pre_topc\ X0))\Rightarrow(\forall X1. \\ &((\neg v2_struct_0\ X1)\wedge(m1_pre_topc\ X1\ X0))\Rightarrow(\forall X2.((\neg v2_struct_0\ X2)\wedge(m1_pre_topc\ X2\ X0))\Rightarrow((\neg r1_tsep_1\ X1\ X2)\Rightarrow(\forall X3.((\neg \\ &v2_struct_0\ X3)\wedge((v1_pre_topc\ X3)\wedge(m1_pre_topc\ X3\ X0))))\Rightarrow((X3 = \\ &k2_tsep_1\ X0\ X1\ X2)\Leftrightarrow(u1_struct_0\ X3 = k3_xboole_0\ (u1_struct_0\ X1)\ (u1_struct_0\ X2)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.(l1_struct_0\ X0)\Rightarrow(\forall X1.(l1_struct_0\ X1)\Rightarrow((r1_tsep_1\ X0\ X1)\Leftrightarrow(r1_xboole_0\ (u1_struct_0\ X0)\ (u1_struct_0\ X1)))) \quad (17)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (m1_pre_topc X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (m1_pre_topc X2 X0)) \Rightarrow (\forall X3.((\neg v2_struct_0 X3) \wedge ((v1_pre_topc \\
& X3) \wedge (m1_pre_topc X3 X0))) \Rightarrow ((X3 = k1_tsep_1 X0 X1 X2) \Leftrightarrow (u1_struct_0 \\
& X3 = k2_xboole_0 (u1_struct_0 X1) (u1_struct_0 X2))))))
\end{aligned} \tag{18}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_pre_topc X0) \wedge (l1_pre_topc \\
& X0))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge (m1_pre_topc X1 X0)) \Rightarrow (\\
& \forall X2.((\neg v2_struct_0 X2) \wedge (m1_pre_topc X2 X0)) \Rightarrow ((r3_tsep_1 \\
& X0 X1 X2) \Leftrightarrow (\exists X3.((\neg v2_struct_0 X3) \wedge (m1_pre_topc X3 X0)) \wedge \\
& (\exists X4.((\neg v2_struct_0 X4) \wedge (m1_pre_topc X4 X0)) \wedge ((r4_tsep_1 \\
& X0 X3 X4) \wedge ((m1_pre_topc X1 X3) \wedge ((m1_pre_topc X2 X4) \wedge ((r1_tsep_1 \\
& X3 X4) \vee (r1_tsep_1 (k2_tsep_1 X0 X3 X4) (k1_tsep_1 X0 X1 X2))))))))))
\end{aligned}$$