

t25_pencil_2 (TMTbjMbgqaG- bQWYopQCERUEQG5h2AkMrsrh)

October 27, 2020

Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v15_pencil_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v10_pencil_1 : \iota \Rightarrow o$ be given. Let $k2_pencil_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_pencil_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ 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 $k5_pencil_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_pencil_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $k2_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_struct_0 : \iota \Rightarrow \iota$ be given. Let $v2_funct_1 : \iota \Rightarrow o$ be given. Let $k7_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_tops_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_pre_topc : \iota \Rightarrow o$ be given. Let $v3_pencil_1 : \iota \Rightarrow o$ be given. Let $v4_pencil_1 : \iota \Rightarrow o$ be given. Let $v5_pencil_1 : \iota \Rightarrow o$ be given. Let $v6_pencil_1 : \iota \Rightarrow o$ be given. Let $v11_pencil_1 : \iota \Rightarrow o$ be given. Let $v14_pencil_1 : \iota \Rightarrow o$ be given. Let $v4_waybel_3 : \iota \Rightarrow o$ be given. Let $v3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_t_0topsp : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_funct_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.(l1_struct_0 X0) \Rightarrow (\forall X1.(l1_struct_0 X1) \Rightarrow (\forall X2. \\
 & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u1_struct_0 X0) (u1_struct_0 \\
 & X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
 & X0) (u1_struct_0 X1)))))) \Rightarrow (\forall X3.(m1_subset_1 X3 (k1_zfmisc_1 \\
 & (u1_struct_0 X1))) \Rightarrow (((k2_relset_1 (u1_struct_0 X1) X2 = k2_struct_0 \\
 & X1) \wedge (v2_funct_1 X2)) \Rightarrow (k8_relset_1 (u1_struct_0 X0) (u1_struct_0 \\
 & X1) X2 X3 = k7_relset_1 (u1_struct_0 X1) (u1_struct_0 X0) (k2_tops_2 \\
 & (u1_struct_0 X0) (u1_struct_0 X1) X2) X3))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_relat_1 X1) \wedge \\
& (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge (v15_pencil_1 \\
& X1)))) \Rightarrow ((\forall X2.(m1_subset_1 X2 X0) \Rightarrow (v10_pencil_1 (k2_pencil_1 \\
& X0 X1 X2))) \Rightarrow (\forall X2.(m1_pencil_2 X2 X0 X1) \Rightarrow (\forall X3.((v1_funct_1 \\
& X3) \wedge ((v1_funct_2 X3 (u1_struct_0 (k5_pencil_1 X0 X1)) (u1_struct_0 \\
& (k5_pencil_1 X0 X1))) \wedge ((v1_pencil_2 X3 (k5_pencil_1 X0 X1) (k5_pencil_1 \\
& X0 X1)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
& (k5_pencil_1 X0 X1)) (u1_struct_0 (k5_pencil_1 X0 X1)))))) \Rightarrow \\
& (m1_pencil_2 (k7_relset_1 (u1_struct_0 (k5_pencil_1 X0 X1)) (\\
& u1_struct_0 (k5_pencil_1 X0 X1)) X3 X2) X0 X1))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_pre_topc X0)) \Rightarrow (\forall X1. \\
& ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (u1_struct_0 X0) (u1_struct_0 \\
& X0)) \wedge ((v1_pencil_2 X1 X0 X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0)))))) \Rightarrow ((v1_funct_1 (k2_tops_2 \\
& (u1_struct_0 X0) (u1_struct_0 X0) X1)) \wedge ((v1_funct_2 (k2_tops_2 \\
& (u1_struct_0 X0) (u1_struct_0 X0) X1) (u1_struct_0 X0) (u1_struct_0 \\
& X0)) \wedge ((v1_pencil_2 (k2_tops_2 (u1_struct_0 X0) (u1_struct_0 \\
& X0) X1) X0 X0) \wedge (m1_subset_1 (k2_tops_2 (u1_struct_0 X0) (u1_struct_0 \\
& X0) X1) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X1) \wedge \\
& (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge (v15_pencil_1 \\
& X1)))) \Rightarrow ((\neg v2_struct_0 (k5_pencil_1 X0 X1)) \wedge ((\neg v3_pencil_1 \\
& (k5_pencil_1 X0 X1)) \wedge ((\neg v4_pencil_1 (k5_pencil_1 X0 X1)) \wedge ((v5_pencil_1 \\
& (k5_pencil_1 X0 X1)) \wedge (v6_pencil_1 (k5_pencil_1 X0 X1))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X1) \wedge \\
& (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v11_pencil_1 \\
& X1) \wedge (v14_pencil_1 X1)))))) \Rightarrow (\forall X2.(m1_pencil_2 X2 X0 X1) \Rightarrow \\
& (m1_subset_1 X2 (k1_zfmisc_1 (u1_struct_0 (k5_pencil_1 X0 X1))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\forall X0.(l1_pre_topc X0) \Rightarrow (l1_struct_0 X0) \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1_xboole_0 X0) \wedge ((v1_relat_1 X1) \wedge \\ & (v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge ((v1_partfun1 X1 X0) \wedge ((v4_waybel_3 \\ & X1) \wedge (v11_pencil_1 X1)))))) \Rightarrow ((\neg v2_struct_0 (k5_pencil_1 X0 \\ & X1)) \wedge (l1_pre_topc (k5_pencil_1 X0 X1))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1_funct_1 X2) \wedge ((v1_funct_2 \\ & X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))) \Rightarrow \\ & ((v1_funct_1 (k2_tops_2 X0 X1 X2)) \wedge ((v1_funct_2 (k2_tops_2 X0 \\ & X1 X2) X1 X0) \wedge (m1_subset_1 (k2_tops_2 X0 X1 X2) (k1_zfmisc_1 (k2_zfmisc_1 \\ & X1 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1_pre_topc X0) \Rightarrow (\forall X1. (l1_pre_topc X1) \Rightarrow (\forall X2. \\ & ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (u1_struct_0 X0) (u1_struct_0 \\ & X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X1)))))) \Rightarrow ((v1_pencil_2 X2 X0 X1) \Leftrightarrow ((v3_funct_2 \\ & X2 (u1_struct_0 X0) (u1_struct_0 X1)) \wedge ((v1_t_0topsp X2 X0 X1) \wedge \\ & ((v3_funct_2 (k2_tops_2 (u1_struct_0 X0) (u1_struct_0 X1) X2) \\ & (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (v1_t_0topsp (k2_tops_2 (\\ & u1_struct_0 X0) (u1_struct_0 X1) X2) X1 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0. (l1_struct_0 X0) \Rightarrow (k2_struct_0 X0 = u1_struct_0 X0) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge (v5_relat_1 X1 X0)) \Rightarrow (\\ & (v2_funct_2 X1 X0) \Leftrightarrow (k2_relset_1 X0 X1 = X0)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v11_pencil_1 \\ & X0) \wedge (v15_pencil_1 X0)))) \Rightarrow ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge \\ & ((v11_pencil_1 X0) \wedge (v14_pencil_1 X0)))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))) \Rightarrow (((v1_funct_1 X2) \wedge (v3_funct_2 X2 X0 X1)) \Rightarrow \\ & ((v1_funct_1 X2) \wedge ((v2_funct_1 X2) \wedge (v2_funct_2 X2 X1)))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge (v15_pencil_1 \\ & X0))) \Rightarrow ((v1_relat_1 X0) \wedge ((v1_funct_1 X0) \wedge ((v4_waybel_3 X0) \wedge \\ & (v11_pencil_1 X0)))) \end{aligned} \quad (14)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))\Rightarrow((v4_relat_1 X2 X0)\wedge(v5_relat_1 X2 X1)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))\Rightarrow(v1_relat_1 X2) \quad (16)$$

Theorem 1

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0)\Rightarrow(\forall X1.((v1_relat_1 X1)\wedge \\ & (v4_relat_1 X1 X0)\wedge((v1_funct_1 X1)\wedge((v1_partfun1 X1 X0)\wedge(v15_pencil_1 \\ & X1))))\Rightarrow((\forall X2.(m1_subset_1 X2 X0)\Rightarrow(v10_pencil_1 (k2_pencil_1 \\ & X0 X1 X2)))\Rightarrow(\forall X2.(m1_pencil_2 X2 X0 X1)\Rightarrow(\forall X3.((v1_funct_1 \\ & X3)\wedge((v1_funct_2 X3 (u1_struct_0 (k5_pencil_1 X0 X1)) (u1_struct_0 \\ & (k5_pencil_1 X0 X1)))\wedge((v1_pencil_2 X3 (k5_pencil_1 X0 X1) (k5_pencil_1 \\ & X0 X1))\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\ & (k5_pencil_1 X0 X1)) (u1_struct_0 (k5_pencil_1 X0 X1))))))\Rightarrow \\ & (m1_pencil_2 (k8_relset_1 (u1_struct_0 (k5_pencil_1 X0 X1)) (\\ & u1_struct_0 (k5_pencil_1 X0 X1)) X3 X2) X0 X1)))) \end{aligned}$$