

t29_midsp_2

(TMb5AHCvzXPuFfZkuEzZiBRmQL5iH61Y9mK)

October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v13_algstr_0 : \iota \Rightarrow o$ be given. Let $v2_rlvect_1 : \iota \Rightarrow o$ be given. Let $v3_rlvect_1 : \iota \Rightarrow o$ be given. Let $v4_rlvect_1 : \iota \Rightarrow o$ be given. Let $v2_midsp_2 : \iota \Rightarrow o$ be given. Let $l2_algstr_0 : \iota \Rightarrow o$ be given. Let $l1_midsp_1 : \iota \Rightarrow o$ 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 $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $r1_midsp_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_midsp_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_midsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_midsp_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_algstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v3_rlvect_1 \\ & X0) \wedge ((v4_rlvect_1 X0) \wedge (l2_algstr_0 X0)))))) \Rightarrow (\forall X1. (m1_subset_1 \\ & X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. (m1_subset_1 X2 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X3. (m1_subset_1 X3 (u1_struct_0 X0)) \Rightarrow (\forall X4. \\ & (m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (((k1_algstr_0 X0 X1 X3 = k1_algstr_0 \\ & X0 X1 X4) \vee (k1_algstr_0 X0 X3 X1 = k1_algstr_0 X0 X4 X1)) \Rightarrow (X3 = X4)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (l2_algstr_0 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge (l1_midsp_1 X1)) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 (u1_struct_0 X1)) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 \\ & X3 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X1)) (u1_struct_0 \\ & X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & (u1_struct_0 X1) (u1_struct_0 X1)) (u1_struct_0 X0)))))) \Rightarrow ((v1_midsp_2 \\ & X3 X1 X0) \Rightarrow (k1_midsp_1 X1 X2 X2 = X2)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_midsp_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\
& v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge (l2_algstr_0 X1)))))) \Rightarrow (\forall X2. \\
& ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 (u1_struct_0 X0) \\
& (u1_struct_0 X0)) (u1_struct_0 X1))) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) \\
& (u1_struct_0 X1)))))) \Rightarrow (((r1_midsp_2 (u1_struct_0 X0) X1 X2) \wedge \\
& (v1_midsp_2 X2 X0 X1)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.(m1_subset_1 X6 \\
& (u1_struct_0 X0)) \Rightarrow ((k1_midsp_1 X0 X3 X4 = k1_midsp_1 X0 X5 X6) \Leftrightarrow (\\
& k2_binop_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 X1) \\
& X2 X3 X6 = k2_binop_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 \\
& X1) X2 X5 X4))))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \tag{4}$$

Assume the following.

$$\forall X0. \exists X1. m1_subset_1 X1 X0 \tag{5}$$

Assume the following.

$$\forall X0. (l1_midsp_1 X0) \Rightarrow (l1_struct_0 X0) \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& ((\neg v1_xboole_0 X0) \wedge ((\neg v1_xboole_0 X1) \wedge (((v1_funct_1 X3) \wedge ((\\
& v1_funct_2 X3 (k2_zfmisc_1 X0 X1) X2) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 X0 X1) X2)))))) \wedge ((m1_subset_1 X4 X0) \wedge \\
& (m1_subset_1 X5 X1)))) \Rightarrow (m1_subset_1 (k2_binop_1 X0 X1 X2 X3 X4 \\
& X5) X2)
\end{aligned} \tag{7}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge (l1_midsp_1 X0)) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (m1_subset_1 (k1_midsp_1 X0 X1 X2) (u1_struct_0 X0)) \tag{8}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge \\
& (l2_algstr_0 X1)) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 \\
& X2 (k2_zfmisc_1 X0 X0) (u1_struct_0 X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) (u1_struct_0 X1)))))) \Rightarrow ((r1_midsp_2 \\
& X0 X1 X2) \Leftrightarrow ((\forall X3.(m1_subset_1 X3 X0) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 (u1_struct_0 X1)) \Rightarrow (\exists X5.(m1_subset_1 X5 X0) \wedge (k2_binop_1 \\
& X0 X0 (u1_struct_0 X1) X2 X3 X5 = X4)))))) \wedge ((\forall X3.(m1_subset_1 \\
& X3 X0) \Rightarrow (\forall X4.(m1_subset_1 X4 X0) \Rightarrow (\forall X5.(m1_subset_1 \\
& X5 X0) \Rightarrow ((k2_binop_1 X0 X0 (u1_struct_0 X1) X2 X3 X4 = k2_binop_1 X0 \\
& X0 (u1_struct_0 X1) X2 X3 X5) \Rightarrow (X4 = X5)))))) \wedge (\forall X3.(m1_subset_1 \\
& X3 X0) \Rightarrow (\forall X4.(m1_subset_1 X4 X0) \Rightarrow (\forall X5.(m1_subset_1 \\
& X5 X0) \Rightarrow (k1_algstr_0 X1 (k2_binop_1 X0 X0 (u1_struct_0 X1) X2 X3 X4) \\
& (k2_binop_1 X0 X0 (u1_struct_0 X1) X2 X4 X5) = k2_binop_1 X0 X0 (u1_struct_0 \\
& X1) X2 X3 X5)))))))))
\end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_midsp_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l2_algstr_0 X1)) \Rightarrow (\forall X2.((v1_funct_1 \\
& X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0)) (u1_struct_0 X1)) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\
& X1)))))) \Rightarrow ((v1_midsp_2 X2 X0 X1) \Leftrightarrow (\forall X3.(m1_subset_1 X3 (\\
& u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow ((k1_midsp_1 X0 \\
& X3 X4 = X5) \Leftrightarrow (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 \\
& X1) X2 X3 X5 = k2_binop_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 \\
& X1) X2 X5 X4)))))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_algstr_0 X0)) \Rightarrow (\forall X1. \\
& (m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (k1_midsp_2 X0 X1 = k1_algstr_0 \\
& X0 X1 X1))
\end{aligned} \tag{11}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v2_midsp_2 X0) \wedge (\\ & l2_algstr_0 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge (l1_midsp_1 \\ & X1)) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 \\ & (u1_struct_0 X1) (u1_struct_0 X1)) (u1_struct_0 X0)) \wedge (m1_subset_1 \\ & X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 \\ & X1)) (u1_struct_0 X0)))))) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\ & X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5. \\ & (m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow (((r1_midsp_2 (u1_struct_0 \\ & X1) X0 X2) \wedge (v1_midsp_2 X2 X1 X0)) \Rightarrow ((k1_midsp_1 X1 X3 X4 = X5) \Leftrightarrow (k2_binop_1 \\ & (u1_struct_0 X1) (u1_struct_0 X1) (u1_struct_0 X0) X2 X3 X4 = k1_midsp_2 \\ & X0 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 X1) (u1_struct_0 \\ & X0) X2 X3 X5)))))))))) \end{aligned}$$