

t41_midsp_1
(TMVsUCrLZ9Z3o1GxCQawe4L16dst3PwcEw1)

October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v2_midsp_1 : \iota \Rightarrow o$ be given. Let $l1_midsp_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r2_midsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_domain_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_midsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_midsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_midsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_midsp_1 X0) \wedge (l1_midsp_1 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ & (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\ & ((r1_midsp_1 X0 X1 X2 X3 X4) \Rightarrow (r2_midsp_1 X0 (k1_domain_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0) X1 X2) (k1_domain_1 (u1_struct_0 X0) (u1_struct_0 \\ & X0) X3 X4)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v2_midsp_1 \\ & X0) \wedge (l1_midsp_1 X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 \\ & X2 (u1_struct_0 X0)))) \Rightarrow (k3_midsp_1 X0 X1 X2 = k1_midsp_1 X0 X1 X2) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge ((v2_midsp_1 \\ & X0) \wedge (l1_midsp_1 X0))) \wedge ((m1_subset_1 X1 (u1_struct_0 X0)) \wedge (m1_subset_1 \\ & X2 (u1_struct_0 X0)))) \Rightarrow (m1_subset_1 (k3_midsp_1 X0 X1 X2) (u1_struct_0 \\ & X0)) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_midsp_1 X0) \wedge (l1_midsp_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& \quad (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& \quad ((r1_midsp_1 X0 X1 X2 X3 X4) \Leftrightarrow (k3_midsp_1 X0 X1 X4 = k3_midsp_1 X0 X2 \\
& \quad \quad X3))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_midsp_1 X0)) \Rightarrow ((v2_midsp_1 \\
& \quad X0) \Leftrightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& \quad (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& \quad ((k1_midsp_1 X0 X1 X1 = X1) \wedge ((k1_midsp_1 X0 X1 X2 = k1_midsp_1 X0 X2 \\
& \quad X1) \wedge ((k1_midsp_1 X0 (k1_midsp_1 X0 X1 X2) (k1_midsp_1 X0 X3 X4) = \\
& \quad k1_midsp_1 X0 (k1_midsp_1 X0 X1 X3) (k1_midsp_1 X0 X2 X4)) \wedge (\exists X5. \\
& \quad (m1_subset_1 X5 (u1_struct_0 X0)) \wedge (k1_midsp_1 X0 X5 X1 = X2))))))))))
\end{aligned} \tag{5}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v2_midsp_1 X0) \wedge (l1_midsp_1 \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (r2_midsp_1 X0 (k1_domain_1 \\
& \quad (u1_struct_0 X0) (u1_struct_0 X0) X1 (k3_midsp_1 X0 X1 X2)) (k1_domain_1 \\
& \quad (u1_struct_0 X0) (u1_struct_0 X0) (k3_midsp_1 X0 X1 X2) X2))))
\end{aligned}$$