

t8_scmfsa7b (TMFEb-
vNek4NbRp19LFDVd6YkCpdGe3AWJMm)

October 27, 2020

Let $v1_ami_2 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_scmfsa_2 : \iota$ be given. Let $r3_scmfsa7b : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_scmfsa_2 : \iota \Rightarrow o$ be given. Let $k2_compos_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_compos_1 : \iota \Rightarrow \iota$ be given. Let $k16_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_11 : \iota$ be given. Let $k14_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_9 : \iota$ be given. Let $k10_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_5 : \iota$ be given. Let $k9_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_4 : \iota$ be given. Let $np_3 : \iota$ be given. Let $k7_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_2 : \iota$ be given. Let $k6_scmfsa_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np_1 : \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\
& (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\
& (\forall X2.((v1_ami_2 X2) \wedge (m1_subset_1 X2 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\
& (\forall X3.((v1_ami_2 X3) \wedge (m1_subset_1 X3 (u1_struct_0 k1_scmfsa_2)))) \Rightarrow \\
& ((k8_scmfsa_2 X0 X1 = k8_scmfsa_2 X2 X3) \Rightarrow ((X0 = X2) \wedge (X1 = X3))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1_scmfsa_2 X0) \Rightarrow (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 \\
& X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow (k2_compos_0 (u1_compos_1 k1_scmfsa_2) \\
& (k16_scmfsa_2 X1 X0) = np_11))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(m1_scmfsa_2 X0) \Rightarrow (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 \\
& X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow (\forall X2.((v1_ami_2 X2) \wedge (\\
& m1_subset_1 X2 (u1_struct_0 k1_scmfsa_2))) \Rightarrow (k2_compos_0 (u1_compos_1 \\
& k1_scmfsa_2) (k14_scmfsa_2 X1 X2 X0) = np_9)))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (k2_compos_0 (u1_compos_1 k1_scmfsa_2) (k10_scmfsa_2 X0 X1) = \\ & \quad np_5)) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (k2_compos_0 (u1_compos_1 k1_scmfsa_2) (k9_scmfsa_2 X0 X1) = np_4)) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (k2_compos_0 (u1_compos_1 k1_scmfsa_2) (k8_scmfsa_2 X0 X1) = np_3)) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (k2_compos_0 (u1_compos_1 k1_scmfsa_2) (k7_scmfsa_2 X0 X1) = np_2)) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (k2_compos_0 (u1_compos_1 k1_scmfsa_2) (k6_scmfsa_2 X0 X1) = np_1)) \end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 \\ & \quad k1_scmfsa_2))) \wedge ((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 \\ & \quad k1_scmfsa_2)))) \Rightarrow (m1_subset_1 (k8_scmfsa_2 X0 X1) (u1_compos_1 \\ & \quad k1_scmfsa_2)) \end{aligned} \tag{9}$$

Assume the following.

$$\begin{aligned} & \forall X0. (m1_subset_1 X0 (u1_compos_1 k1_scmfsa_2)) \Rightarrow (\forall X1. \\ & ((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & ((r3_scmfsa7b X0 X1) \Leftrightarrow (\neg \forall X2. ((v1_ami_2 X2) \wedge (m1_subset_1 \\ & \quad X2 (u1_struct_0 k1_scmfsa_2)))) \Rightarrow (\forall X3. (m1_scmfsa_2 X3) \Rightarrow \\ & ((k6_scmfsa_2 X1 X2 \neq X0) \wedge ((k7_scmfsa_2 X1 X2 \neq X0) \wedge ((k8_scmfsa_2 \\ & \quad X1 X2 \neq X0) \wedge ((k9_scmfsa_2 X1 X2 \neq X0) \wedge ((k10_scmfsa_2 X1 X2 \neq X0) \wedge \\ & \quad (k10_scmfsa_2 X2 X1 \neq X0) \wedge ((k14_scmfsa_2 X1 X2 X3 \neq X0) \wedge (k16_scmfsa_2 \\ & \quad X1 X3 \neq X0)))))))))) \end{aligned} \tag{10}$$

Theorem 1

$$\begin{aligned} & \forall X0.((v1_ami_2 X0) \wedge (m1_subset_1 X0 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X1.((v1_ami_2 X1) \wedge (m1_subset_1 X1 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\forall X2.((v1_ami_2 X2) \wedge (m1_subset_1 X2 (u1_struct_0 k1_scmfsa_2))) \Rightarrow \\ & (\neg(X0 \neq X1) \wedge (r3_scmfsa7b (k8_scmfsa_2 X1 X2) X0)))) \end{aligned}$$