

t16_semi_af1 (TM-
Rum9ypDYG5AQ2qBdyJBpaouxTQnXomPMX)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v1_semi_af1 : \iota \Rightarrow o$ be given. Let $l1_analoaf : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $r2_analoaf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v1_semi_af1 X0) \wedge (l1_analoaf \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& \quad (u1_struct_0 X0)) \Rightarrow ((r2_analoaf X0 X1 X2 X1 X3) \Rightarrow ((r2_analoaf X0 \\
& \quad X1 X3 X1 X2) \wedge ((r2_analoaf X0 X2 X1 X1 X3) \wedge ((r2_analoaf X0 X1 X2 X3 X1) \wedge \\
& \quad ((r2_analoaf X0 X1 X3 X2 X1) \wedge ((r2_analoaf X0 X2 X1 X3 X1) \wedge ((r2_analoaf \\
& \quad X0 X3 X1 X1 X2) \wedge ((r2_analoaf X0 X3 X1 X2 X1) \wedge ((r2_analoaf X0 X2 X1 X2 \\
& \quad X3) \wedge ((r2_analoaf X0 X1 X2 X2 X3) \wedge ((r2_analoaf X0 X2 X1 X3 X2) \wedge ((r2_analoaf \\
& \quad X0 X2 X3 X2 X1) \wedge ((r2_analoaf X0 X1 X2 X3 X2) \wedge ((r2_analoaf X0 X3 X2 X2 \\
& \quad X1) \wedge ((r2_analoaf X0 X2 X3 X1 X2) \wedge ((r2_analoaf X0 X3 X2 X1 X2) \wedge ((r2_analoaf \\
& \quad X0 X3 X1 X3 X2) \wedge ((r2_analoaf X0 X1 X3 X3 X2) \wedge ((r2_analoaf X0 X3 X1 X2 \\
& \quad X3) \wedge ((r2_analoaf X0 X1 X3 X2 X3) \wedge ((r2_analoaf X0 X3 X2 X3 X1) \wedge ((r2_analoaf \\
& \quad X0 X2 X3 X3 X1) \wedge ((r2_analoaf X0 X3 X2 X1 X3) \wedge (r2_analoaf X0 X2 X3 X1 \\
& \quad X3))))))))))))))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v1_semi_af1 X0) \wedge (l1_analoaf \\
& \quad X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& \quad (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\
& \quad (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& \quad ((r2_analoaf X0 X1 X2 X3 X4) \Rightarrow ((r2_analoaf X0 X2 X1 X3 X4) \wedge ((r2_analoaf \\
& \quad X0 X1 X2 X4 X3) \wedge ((r2_analoaf X0 X2 X1 X4 X3) \wedge ((r2_analoaf X0 X3 X4 X1 \\
& \quad X2) \wedge ((r2_analoaf X0 X4 X3 X1 X2) \wedge ((r2_analoaf X0 X3 X4 X2 X1) \wedge (r2_analoaf \\
& \quad X0 X4 X3 X2 X1))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_analoaf X0)) \Rightarrow ((v1_semi_af1 \\
& X0) \Leftrightarrow ((\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\
& (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (r2_analoaf X0 X1 X2 X2 X1))) \wedge \\
& ((\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 (r2_analoaf X0 X1 X2 X3 X3)))) \wedge ((\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 (\forall X5.(m1_subset_1 \\
& X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.(m1_subset_1 X6 (u1_struct_0 \\
& X0)) \Rightarrow (((r2_analoaf X0 X1 X2 X3 X4) \wedge (r2_analoaf X0 X1 X2 X5 X6)) \Rightarrow (\\
& (X1 = X2) \vee (r2_analoaf X0 X3 X4 X5 X6)))))))) \wedge ((\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 ((r2_analoaf \\
& X0 X1 X2 X1 X3) \Rightarrow (r2_analoaf X0 X2 X1 X2 X3)))) \wedge ((\neg \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 (r2_analoaf \\
& X0 X1 X2 X1 X3)))) \wedge ((\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 (\exists X4.(m1_subset_1 X4 (u1_struct_0 \\
& X0)) \wedge ((r2_analoaf X0 X1 X2 X3 X4) \wedge (r2_analoaf X0 X1 X3 X2 X4)))))) \wedge \\
& ((\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(\\
& m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\exists X3.(m1_subset_1 X3 \\
& (u1_struct_0 X0)) \wedge (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\
& (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow ((r2_analoaf X0 \\
& X1 X2 X1 X3) \wedge (\neg \forall X6.(m1_subset_1 X6 (u1_struct_0 X0)) \Rightarrow ((\\
& r2_analoaf X0 X1 X3 X1 X4) \wedge (\neg (r2_analoaf X0 X1 X5 X1 X6) \wedge (r2_analoaf \\
& X0 X3 X5 X4 X6)))))))) \wedge ((\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 (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow \\
& (\forall X6.(m1_subset_1 X6 (u1_struct_0 X0)) \Rightarrow (\forall X7.(m1_subset_1 \\
& X7 (u1_struct_0 X0)) \Rightarrow (((r2_analoaf X0 X1 X2 X1 X3) \wedge ((r2_analoaf \\
& X0 X1 X4 X1 X5) \wedge ((r2_analoaf X0 X1 X6 X1 X7) \wedge ((r2_analoaf X0 X2 X4 X3 \\
& X5) \wedge (r2_analoaf X0 X2 X6 X3 X7)))))) \Rightarrow ((r2_analoaf X0 X1 X2 X1 X4) \vee \\
& ((r2_analoaf X0 X1 X2 X1 X6) \vee (r2_analoaf X0 X4 X6 X5 X7)))))) \wedge \\
& ((\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 \\
& (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.(m1_subset_1 \\
& X6 (u1_struct_0 X0)) \Rightarrow (((r2_analoaf X0 X1 X2 X3 X4) \wedge ((r2_analoaf \\
& X0 X1 X2 X5 X6) \wedge ((r2_analoaf X0 X1 X3 X2 X4) \wedge (r2_analoaf X0 X1 X5 X2 \\
& X6)))) \Rightarrow ((r2_analoaf X0 X1 X2 X1 X3) \vee ((r2_analoaf X0 X1 X2 X1 X5) \vee \\
& (r2_analoaf X0 X3 X5 X4 X6)))))) \wedge ((\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 (\forall X5.(m1_subset_1 X5 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X6.(m1_subset_1 X6 (u1_struct_0 X0)) \Rightarrow \\
& ((r2_analoaf X0 X1 X2 X1 X3) \wedge ((r2_analoaf X0 X4 X5 X4 X6) \wedge ((r2_analoaf \\
& X0 X1 X5 X2 X4) \wedge (r2_analoaf X0 X2 X6 X3 X5)))) \Rightarrow (r2_analoaf X0 X3 X4 \\
& X1 X6)))) \wedge ((\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 (\neg (\neg r2_analoaf X0 X1 X2 X1 X3) \wedge ((r2_analoaf X0 X1 X2 X3 X4) \wedge \\
& ((r2_analoaf X0 X1 X3 X2 X4) \wedge (r2_analoaf X0 X1 X4 X2 X3)))))))))) \wedge \\
& (3)
\end{aligned}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((v1_semi_af1 X0) \wedge (l1_analoaf \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 \\ & (u1_struct_0 X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X0)) \Rightarrow \\ & (\forall X5.(m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.(m1_subset_1 \\ & X6 (u1_struct_0 X0)) \Rightarrow (\neg(\neg r2_analoaf X0 X1 X2 X1 X3) \wedge ((r2_analoaf \\ & X0 X1 X2 X4 X5) \wedge ((r2_analoaf X0 X1 X3 X4 X6) \wedge ((r2_analoaf X0 X2 X3 X5 \\ & X6) \wedge ((X4 \neq X5) \wedge (r2_analoaf X0 X4 X5 X4 X6))))))))))))) \end{aligned}$$