

t9\_dirort  
(TMFbN16pBys6PapUvQj2M7xXfTY6fJKwtjH)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_dirort : \iota \Rightarrow o$  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  $r2\_dirort : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_analoaf : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v1\_dirort X0) \wedge (l1\_analoaf X0))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\
& \quad X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& \quad X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow ((r2\_dirort \\
& \quad X0 X1 X2 X3 X4) \Leftrightarrow (\exists X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0)) \wedge ( \\
& \quad \exists X6.(m1\_subset\_1 X6 (u1\_struct\_0 X0)) \wedge ((X5 \neq X6) \wedge (r2\_analoaf \\
& \quad X0 X5 X6 X1 X2) \wedge (r2\_analoaf X0 X5 X6 X3 X4)))))))))) \quad (1)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_analoaf X0)) \Rightarrow ((v1\_dirort \\
& X0) \Leftrightarrow ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow \\
& (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X0)) \Rightarrow ((r2\_analoaf X0 \\
& X1 X1 X3 X5) \wedge ((r2\_analoaf X0 X1 X3 X5 X5) \wedge ((\neg(r2\_analoaf X0 X1 X3 X2 \\
& X4) \wedge ((r2\_analoaf X0 X1 X3 X4 X2) \wedge ((X1 \neq X3) \wedge (X2 \neq X4)))))) \wedge ((\neg(r2\_analoaf \\
& X0 X1 X3 X2 X4) \wedge ((r2\_analoaf X0 X1 X3 X2 X5) \wedge ((\neg r2\_analoaf X0 X1 X3 \\
& X4 X5) \wedge (\neg r2\_analoaf X0 X1 X3 X5 X4)))))) \wedge (((r2\_analoaf X0 X1 X3 X2 X4) \Rightarrow \\
& (r2\_analoaf X0 X3 X1 X4 X2)) \wedge (((r2\_analoaf X0 X1 X3 X2 X4) \wedge (r2\_analoaf \\
& X0 X1 X3 X4 X5)) \Rightarrow (r2\_analoaf X0 X1 X3 X2 X5)) \wedge (\neg(r2\_analoaf X0 X1 X2 \\
& X3 X4) \wedge ((\neg r2\_analoaf X0 X3 X4 X1 X2) \wedge (\neg r2\_analoaf X0 X3 X4 X2 X1)))))) \wedge \\
& ((\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.( \\
& m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (u1\_struct\_0 X0)) \Rightarrow (\exists X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \wedge \\
& ((X3 \neq X4) \wedge (r2\_analoaf X0 X3 X4 X1 X2)))))) \wedge (\forall X1.(m1\_subset\_1 \\
& X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\exists X4. \\
& (m1\_subset\_1 X4 (u1\_struct\_0 X0)) \wedge ((X3 \neq X4) \wedge (r2\_analoaf X0 X1 \\
& X2 X3 X4)))))))))
\end{aligned} \tag{2}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v1\_dirort X0) \wedge (l1\_analoaf X0))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(m1\_subset\_1 \\
& X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X0)) \Rightarrow ((r2\_dirort \\
& X0 X1 X2 X3 X4) \Rightarrow (r2\_dirort X0 X2 X1 X4 X3))))))
\end{aligned}$$