

t40_circrm1

(TMKodQuRcC9FcftLsmX3s14i4qGEJGHNhqE)

October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r5_circrm1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_funct_1 : \iota \Rightarrow o$ be given. Let $k2_funct_1 : \iota \Rightarrow \iota$ be given. Let $r1_circrm1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r3_pua2mss1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r4_circrm1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (\forall X1.((\\ v1_relat_1 X1) \wedge (v1_funct_1 X1)) \Rightarrow (((v2_funct_1 X0) \wedge (v2_funct_1 \\ X1)) \Rightarrow (k2_funct_1 (k3_relat_1 X0 X1) = k3_relat_1 (k2_funct_1 X1) \\ (k2_funct_1 X0)))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow ((v2_funct_1 X0) \Rightarrow (k2_funct_1 (k2_funct_1 X0) = X0)) \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\ ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 \\ X2) \wedge (v1_funct_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\ X3)) \Rightarrow (\forall X4.((v4_msualg_1 X4 X0) \wedge (l3_msualg_1 X4 X0)) \Rightarrow (\\ \forall X5.((v4_msualg_1 X5 X1) \wedge (l3_msualg_1 X5 X1)) \Rightarrow ((r5_circrm1 \\ X0 X1 X2 X3 X4 X5) \Leftrightarrow ((r1_circrm1 X0 X1 X2 X3) \wedge ((u3_msualg_1 X0 X4 = \\ k3_relat_1 X2 (u3_msualg_1 X1 X5)) \wedge (u4_msualg_1 X0 X4 = k3_relat_1 \\ X3 (u4_msualg_1 X1 X5)))))))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1_relat_1 X0) \Rightarrow (\forall X1.(v1_relat_1 X1) \Rightarrow (\forall X2. \\ (v1_relat_1 X2) \Rightarrow (k3_relat_1 (k3_relat_1 X0 X1) X2 = k3_relat_1 \\ X0 (k3_relat_1 X1 X2)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 \\
& X2) \wedge (v1_funct_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow (\forall X4.((v4_msualg_1 X4 X0) \wedge (l3_msualg_1 X4 X0)) \Rightarrow (\\
& \forall X5.((v4_msualg_1 X5 X1) \wedge (l3_msualg_1 X5 X1)) \Rightarrow ((r5_circtrm1 \\
& X0 X1 X2 X3 X4 X5) \Rightarrow (r1_circtrm1 X0 X1 X2 X3))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_msualg_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow (\forall X4.((v1_relat_1 X4) \wedge (v1_funct_1 X4)) \Rightarrow (\forall X5. \\
& ((v1_relat_1 X5) \wedge (v1_funct_1 X5)) \Rightarrow (\forall X6.((v1_relat_1 \\
& X6) \wedge (v1_funct_1 X6)) \Rightarrow (((r1_circtrm1 X0 X1 X3 X4) \wedge (r1_circtrm1 \\
& X1 X2 X5 X6)) \Rightarrow (r1_circtrm1 X0 X2 (k3_relat_1 X3 X5) (k3_relat_1 X4 \\
& X6)))))))))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. (((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \wedge ((\\
& v1_relat_1 X1) \wedge (v1_funct_1 X1))) \Rightarrow ((v1_relat_1 (k3_relat_1 X0 \\
& X1)) \wedge (v1_funct_1 (k3_relat_1 X0 X1)))
\end{aligned} \tag{7}$$

Assume the following.

$$\forall X0. \forall X1. v1_relat_1 (k3_relat_1 X0 X1) \tag{8}$$

Assume the following.

$$\forall X0. ((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow ((v1_relat_1 (\\
k2_funct_1 X0)) \wedge (v1_funct_1 (k2_funct_1 X0))) \tag{9}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 \\
& X2) \wedge (v1_funct_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow ((r1_circtrm1 X0 X1 X2 X3) \Leftrightarrow ((v2_funct_1 X2) \wedge ((v2_funct_1 \\
& X3) \wedge ((r3_pua2mss1 X0 X1 X2 X3) \wedge (r3_pua2mss1 X1 X0 (k2_funct_1 X2) \\
& (k2_funct_1 X3))))))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 \\
& X2) \wedge (v1_funct_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow (\forall X4.((v4_msualg_1 X4 X0) \wedge (l3_msualg_1 X4 X0)) \Rightarrow (\\
& \forall X5.((v4_msualg_1 X5 X1) \wedge (l3_msualg_1 X5 X1)) \Rightarrow ((r5_cirqtrm1 \\
& X0 X1 X2 X3 X4 X5) \Leftrightarrow ((r4_cirqtrm1 X0 X1 X2 X3 X4 X5) \wedge (r4_cirqtrm1 X1 \\
& X0 (k2_funct_1 X2) (k2_funct_1 X3) X5 X4))))))))) \\
& \tag{11}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v1_relat_1 \\
& X2) \wedge (v1_funct_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow (\forall X4.((v4_msualg_1 X4 X0) \wedge (l3_msualg_1 X4 X0)) \Rightarrow (\\
& \forall X5.((v4_msualg_1 X5 X1) \wedge (l3_msualg_1 X5 X1)) \Rightarrow ((r4_cirqtrm1 \\
& X0 X1 X2 X3 X4 X5) \Leftrightarrow ((v2_funct_1 X2) \wedge ((v2_funct_1 X3) \wedge ((r3_pua2mss1 \\
& X0 X1 X2 X3) \wedge ((u3_msualg_1 X0 X4 = k3_relat_1 X2 (u3_msualg_1 X1 X5)) \wedge \\
& (u4_msualg_1 X0 X4 = k3_relat_1 X3 (u4_msualg_1 X1 X5))))))))))))) \\
& \tag{12}
\end{aligned}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_msualg_1 X2)) \Rightarrow (\forall X3.((v1_relat_1 X3) \wedge (v1_funct_1 \\
& X3)) \Rightarrow (\forall X4.((v1_relat_1 X4) \wedge (v1_funct_1 X4)) \Rightarrow (\forall X5. \\
& ((v1_relat_1 X5) \wedge (v1_funct_1 X5)) \Rightarrow (\forall X6.((v1_relat_1 \\
& X6) \wedge (v1_funct_1 X6)) \Rightarrow (\forall X7.((v4_msualg_1 X7 X0) \wedge (l3_msualg_1 \\
& X7 X0)) \Rightarrow (\forall X8.((v4_msualg_1 X8 X1) \wedge (l3_msualg_1 X8 X1)) \Rightarrow \\
& (\forall X9.((v4_msualg_1 X9 X2) \wedge (l3_msualg_1 X9 X2)) \Rightarrow (((r5_cirqtrm1 \\
& X0 X1 X3 X4 X7 X8) \wedge (r5_cirqtrm1 X1 X2 X5 X6 X8 X9)) \Rightarrow (r5_cirqtrm1 X0 \\
& X2 (k3_relat_1 X3 X5) (k3_relat_1 X4 X6) X7 X9))))))))))))) \\
& \tag{13}
\end{aligned}$$