

t19_circcmb2
(TMcJEiCqKf3wqTQC3LuatawSfrtoy8ZvdPE)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v2_msafree2 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $r1_xboole_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_msafree2 : \iota \Rightarrow \iota$ be given. Let $k3_msafree2 : \iota \Rightarrow \iota$ be given. Let $k2_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_msafree2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v1_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_facirc_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
& \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1. ((v4_msualg_1 X1 X0) \wedge ((\\
& \quad v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. (m1_subset_1 \\
& \quad X2 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow ((v1_circuit2 X2 X0 X1) \Rightarrow (\forall X3. \\
& \quad (v7_ordinal1 X3) \Rightarrow (k5_facirc_1 X0 X1 X2 X3 = X2))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
& \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
& \quad v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\
& \quad ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\
& \quad l1_msualg_1 X2)))) \Rightarrow (((r1_xboole_0 (k2_msafree2 X0) (k3_msafree2 \\
& \quad X1)) \wedge (X2 = k2_circcomb X0 X1)) \Rightarrow (\forall X3.((v4_msualg_1 X3 X0) \wedge \\
& \quad ((v4_msafree2 X3 X0) \wedge (l3_msualg_1 X3 X0))) \Rightarrow (\forall X4.((v4_msualg_1 \\
& \quad X4 X1) \wedge ((v4_msafree2 X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow (\forall X5. \\
& \quad ((v4_msualg_1 X5 X2) \wedge ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 X5 X2))) \Rightarrow \\
& \quad (((r2_circcomb X0 X1 X3 X4) \wedge (X5 = k3_circcomb X0 X1 X3 X4)) \Rightarrow (\forall X6. \\
& \quad (m1_subset_1 X6 (k4_card_3 (u3_msualg_1 X0 X3))) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k4_card_3 (u3_msualg_1 X1 X4))) \Rightarrow (\forall X8. \\
& \quad (m1_subset_1 X8 (k4_card_3 (u3_msualg_1 X2 X5)))) \Rightarrow (((X6 = k5_relat_1 \\
& \quad X8 (u1_struct_0 X0)) \wedge ((X7 = k5_relat_1 X8 (u1_struct_0 X1)) \wedge (v1_circuit2 \\
& \quad X6 X0 X3))) \Rightarrow (\forall X9.(v7_ordinal1 X9) \Rightarrow (k5_relat_1 (k5_facirc_1 \\
& \quad X2 X5 X8 X9) (u1_struct_0 X1) = k5_facirc_1 X1 X4 X7 X9))))))))) \\
& \hspace{15em} (2)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
& \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((v4_msualg_1 X1 X0) \wedge ((\\
& \quad v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2.(m1_subset_1 \\
& \quad X2 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow (\forall X3.(v7_ordinal1 \\
& \quad X3) \Rightarrow (\forall X4.(v7_ordinal1 X4) \Rightarrow (k5_facirc_1 X0 X1 X2 (k2_xcmplx_0 \\
& \quad X3 X4) = k5_facirc_1 X0 X1 (k5_facirc_1 X0 X1 X2 X3) X4)))))) \\
& \hspace{15em} (3)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
& \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
& \quad v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\
& \quad ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\
& \quad l1_msualg_1 X2)))) \Rightarrow (((r1_xboole_0 (k2_msafree2 X0) (k3_msafree2 \\
& \quad X1)) \wedge (X2 = k2_circcomb X0 X1)) \Rightarrow (\forall X3.((v4_msualg_1 X3 X0) \wedge \\
& \quad ((v4_msafree2 X3 X0) \wedge (l3_msualg_1 X3 X0))) \Rightarrow (\forall X4.((v4_msualg_1 \\
& \quad X4 X1) \wedge ((v4_msafree2 X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow (\forall X5. \\
& \quad ((v4_msualg_1 X5 X2) \wedge ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 X5 X2))) \Rightarrow \\
& \quad (((r2_circcomb X0 X1 X3 X4) \wedge (X5 = k3_circcomb X0 X1 X3 X4)) \Rightarrow (\forall X6. \\
& \quad (m1_subset_1 X6 (k4_card_3 (u3_msualg_1 X2 X5))) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k4_card_3 (u3_msualg_1 X0 X3))) \Rightarrow ((X7 = k5_relat_1 \\
& \quad X6 (u1_struct_0 X0)) \Rightarrow (\forall X8.(v7_ordinal1 X8) \Rightarrow (k5_relat_1 \\
& \quad (k5_facirc_1 X2 X5 X6 X8) (u1_struct_0 X0) = k5_facirc_1 X0 X3 X7 X8))))))))) \\
& \hspace{15em} (4)
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
& \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\
& \quad v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\
& \quad ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\
& \quad l1_msualg_1 X2)))) \Rightarrow (((r1_xboole_0 (k2_msafree2 X0) (k3_msafree2 \\
& \quad X1)) \wedge (X2 = k2_circcomb X0 X1)) \Rightarrow (\forall X3.((v4_msualg_1 X3 X0) \wedge \\
& \quad ((v4_msafree2 X3 X0) \wedge (l3_msualg_1 X3 X0))) \Rightarrow (\forall X4.((v4_msualg_1 \\
& \quad X4 X1) \wedge ((v4_msafree2 X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow (\forall X5. \\
& \quad ((v4_msualg_1 X5 X2) \wedge ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 X5 X2))) \Rightarrow \\
& \quad (((r2_circcomb X0 X1 X3 X4) \wedge (X5 = k3_circcomb X0 X1 X3 X4)) \Rightarrow (\forall X6. \\
& \quad (m1_subset_1 X6 (k4_card_3 (u3_msualg_1 X0 X3))) \Rightarrow (\forall X7. \\
& \quad (m1_subset_1 X7 (k4_card_3 (u3_msualg_1 X1 X4))) \Rightarrow (\forall X8. \\
& \quad (m1_subset_1 X8 (k4_card_3 (u3_msualg_1 X2 X5))) \Rightarrow (((X6 = k5_relat_1 \\
& \quad X8 (u1_struct_0 X0)) \wedge ((X7 = k5_relat_1 X8 (u1_struct_0 X1)) \wedge ((\\
& \quad v1_circuit2 X6 X0 X3) \wedge (v1_circuit2 X7 X1 X4)))) \Rightarrow (v1_circuit2 X8 \\
& \quad X2 X5))))))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& \quad X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 X0) \wedge (l1_msualg_1 X0)))) \wedge \\
& \quad (((v4_msualg_1 X1 X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge \\
& \quad ((m1_subset_1 X2 (k4_card_3 (u3_msualg_1 X0 X1))) \wedge (v7_ordinal1 \\
& \quad X3))) \Rightarrow (m1_subset_1 (k5_facirc_1 X0 X1 X2 X3) (k4_card_3 (u3_msualg_1 \\
& \quad X0 X1)))
\end{aligned} \tag{6}$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\ & v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\ & ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\ & l1_msualg_1 X2)))) \Rightarrow (((r1_xboole_0 (k2_msafree2 X0) (k3_msafree2 \\ & X1)) \wedge (X2 = k2_circcomb X0 X1)) \Rightarrow (\forall X3.((v4_msualg_1 X3 X0) \wedge \\ & ((v4_msafree2 X3 X0) \wedge (l3_msualg_1 X3 X0))) \Rightarrow (\forall X4.((v4_msualg_1 \\ & X4 X1) \wedge ((v4_msafree2 X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow (\forall X5. \\ & ((v4_msualg_1 X5 X2) \wedge ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 X5 X2))) \Rightarrow \\ & (((r2_circcomb X0 X1 X3 X4) \wedge (X5 = k3_circcomb X0 X1 X3 X4)) \Rightarrow (\forall X6. \\ & (v7_ordinal1 X6) \Rightarrow (\forall X7.(v7_ordinal1 X7) \Rightarrow (\forall X8.(\\ & m1_subset_1 X8 (k4_card_3 (u3_msualg_1 X2 X5))) \Rightarrow (\forall X9.(\\ & m1_subset_1 X9 (k4_card_3 (u3_msualg_1 X0 X3))) \Rightarrow (\forall X10. \\ & (m1_subset_1 X10 (k4_card_3 (u3_msualg_1 X1 X4))) \Rightarrow (((X9 = k5_relat_1 \\ & X8 (u1_struct_0 X0)) \wedge ((v1_circuit2 (k5_facirc_1 X0 X3 X9 X6) X0 \\ & X3) \wedge ((X10 = k5_relat_1 (k5_facirc_1 X2 X5 X8 X6) (u1_struct_0 X1)) \wedge \\ & (v1_circuit2 (k5_facirc_1 X1 X4 X10 X7) X1 X4)))) \Rightarrow (v1_circuit2 \\ & (k5_facirc_1 X2 X5 X8 (k2_xcmplx_0 X6 X7) X2 X5))))))))))))) \end{aligned}$$