

t30_circcomb

(TMRj53wU43WigQBJLboCGAAjBLtPPshiRP9)

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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 $k2_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_circcomb : \iota \Rightarrow \iota \Rightarrow o$ 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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11_card_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_circuit1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow ((r1_circcomb X0 X1) \Rightarrow (\\ & \quad k2_circcomb X0 X1 = k2_circcomb X1 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\ & \quad v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\ & ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\ & \quad l1_msualg_1 X2)))) \Rightarrow ((X2 = k2_circcomb X0 X1) \Rightarrow (\forall X3.((v4_msualg_1 \\ & \quad X3 X0) \wedge ((v4_msafree2 X3 X0) \wedge (l3_msualg_1 X3 X0))) \Rightarrow (\forall X4. \\ & ((v4_msualg_1 X4 X1) \wedge ((v4_msafree2 X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow \\ & (\forall X5.((v4_msualg_1 X5 X2) \wedge ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 \\ & \quad X5 X2))) \Rightarrow (\forall X6.(m1_subset_1 X6 (k4_card_3 (u3_msualg_1 \\ & \quad X2 X5))) \Rightarrow (\forall X7.(m1_subset_1 X7 (k4_card_3 (u3_msualg_1 \\ & \quad X1 X4))) \Rightarrow ((X7 = k11_card_3 (u3_msualg_1 X2 X5) X6 (u1_struct_0 X1)) \Rightarrow \\ & (\forall X8.(m1_subset_1 X8 (u4_struct_0 X2)) \Rightarrow (\forall X9.(m1_subset_1 \\ & \quad X9 (u4_struct_0 X1)) \Rightarrow ((X8 = X9) \Rightarrow (k3_circuit1 X2 X5 X6 X8 = k3_circuit1 \\ & \quad X1 X4 X7 X9))))))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((l1_msualg_1 X0) \wedge (l1_msualg_1 X1)) \Rightarrow (\\ & \quad (r1_circcomb X0 X1) \Rightarrow (r1_circcomb X1 X0)) \end{aligned} \quad (3)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & \quad X0) \wedge (l1_msualg_1 X0)))) \Rightarrow (\forall X1.((\neg v2_struct_0 X1) \wedge ((\neg \\ & \quad v11_struct_0 X1) \wedge ((v2_msafree2 X1) \wedge (l1_msualg_1 X1)))) \Rightarrow (\forall X2. \\ & \quad ((\neg v2_struct_0 X2) \wedge ((\neg v11_struct_0 X2) \wedge ((v2_msafree2 X2) \wedge (\\ & \quad l1_msualg_1 X2)))) \Rightarrow (((X2 = k2_circcomb X0 X1) \wedge (r1_circcomb X0 \\ & \quad X1)) \Rightarrow (\forall X3.((v4_msualg_1 X3 X0) \wedge ((v4_msafree2 X3 X0) \wedge (\\ & \quad l3_msualg_1 X3 X0))) \Rightarrow (\forall X4.((v4_msualg_1 X4 X1) \wedge ((v4_msafree2 \\ & \quad X4 X1) \wedge (l3_msualg_1 X4 X1))) \Rightarrow (\forall X5.((v4_msualg_1 X5 X2) \wedge \\ & \quad ((v4_msafree2 X5 X2) \wedge (l3_msualg_1 X5 X2))) \Rightarrow (\forall X6.(m1_subset_1 \\ & \quad X6 (k4_card_3 (u3_msualg_1 X2 X5))) \Rightarrow (\forall X7.(m1_subset_1 \\ & \quad X7 (k4_card_3 (u3_msualg_1 X0 X3))) \Rightarrow ((X7 = k11_card_3 (u3_msualg_1 \\ & \quad X2 X5) X6 (u1_struct_0 X0)) \Rightarrow (\forall X8.(m1_subset_1 X8 (u4_struct_0 \\ & \quad X2)) \Rightarrow (\forall X9.(m1_subset_1 X9 (u4_struct_0 X0)) \Rightarrow ((X8 = X9) \Rightarrow \\ & \quad (k3_circuit1 X2 X5 X6 X8 = k3_circuit1 X0 X3 X7 X9))))))))))))) \end{aligned}$$