

t7_circuit2

(TMcUu3uQp3PhStX2oj9UbsrBTXB1YopRrms)

October 27, 2020

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 $v5_msafree2 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ 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 $m1_msafree2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_msafree2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_msualg_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_card_1 : \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v3_trees_2 : \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ be given. Let $k1_card_1 : \iota \Rightarrow \iota$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\
 & X0) \wedge ((v5_msafree2 X0) \wedge (l1_msualg_1 X0)))))) \Rightarrow (\forall X1.((v4_msualg_1 \\
 & X1 X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. \\
 & (m1_msafree2 X2 X0 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
 & X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_funct_1 (u3_msualg_1 X0 \\
 & (k5_msafree2 X0 X1)) X3)) \Rightarrow (\forall X5.(m1_subset_1 X5 (k1_funct_1 \\
 & (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X3)) \Rightarrow (\forall X6.((v1_relat_1 \\
 & X6) \wedge ((v1_funct_1 X6) \wedge (v3_trees_2 X6))) \Rightarrow (\forall X7.((v1_relat_1 \\
 & X7) \wedge ((v1_funct_1 X7) \wedge (v3_trees_2 X7))) \Rightarrow (((X6 = X4) \wedge ((X7 = X5) \wedge \\
 & (X5 = k3_funct_2 (k1_funct_1 (u3_msualg_1 X0 (k5_msafree2 X0 X1)) \\
 & X3) (k1_funct_1 (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X3) (k1_msualg_3 \\
 & (u1_struct_0 X0) (u3_msualg_1 X0 (k5_msafree2 X0 X1)) (u3_msualg_1 \\
 & X0 (k5_msafree2 X0 X1)) (k3_circuit2 X0 X1 X2) X3) X4))) \Rightarrow (k9_xtuple_0 \\
 & X6 = k9_xtuple_0 X7))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0.((v1_relat_1 X0) \wedge (v1_funct_1 X0)) \Rightarrow (k1_card_1 X0 = k1_card_1 (k9_xtuple_0 X0)) \tag{2}$$

Assume the following.

$$\forall X0.(v1_finset_1 X0) \Rightarrow (k5_card_1 X0 = k1_card_1 X0) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\ & X0) \wedge ((v2_msafree2 X0) \wedge ((v5_msafree2 X0) \wedge (l1_msualg_1 X0)))))) \wedge \\ & (((v4_msualg_1 X1 X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge \\ & (m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 \\ & X3 (k1_funct_1 (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X2) \Rightarrow (v3_trees_2 \\ & X3)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 \\ & X0) \wedge ((v2_msafree2 X0) \wedge ((v5_msafree2 X0) \wedge (l1_msualg_1 X0)))))) \wedge \\ & (((v4_msualg_1 X1 X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge \\ & (m1_subset_1 X2 (u1_struct_0 X0))) \Rightarrow (\forall X3.(m1_subset_1 \\ & X3 (k1_funct_1 (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X2) \Rightarrow ((v1_relat_1 \\ & X3) \wedge ((v1_funct_1 X3) \wedge ((\neg v1_xboole_0 X3) \wedge (v1_finset_1 X3)))))) \end{aligned} \quad (5)$$

Theorem 1

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & X0) \wedge ((v5_msafree2 X0) \wedge (l1_msualg_1 X0)))))) \Rightarrow (\forall X1.((v4_msualg_1 \\ & X1 X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. \\ & (m1_msafree2 X2 X0 X1) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X4.(m1_subset_1 X4 (k1_funct_1 (u3_msualg_1 X0 \\ & (k5_msafree2 X0 X1)) X3) \Rightarrow (\forall X5.(m1_subset_1 X5 (k1_funct_1 \\ & (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X3) \Rightarrow ((X5 = k3_funct_2 (k1_funct_1 \\ & (u3_msualg_1 X0 (k5_msafree2 X0 X1)) X3) (k1_funct_1 (u3_msualg_1 \\ & X0 (k5_msafree2 X0 X1)) X3) (k1_msualg_3 (u1_struct_0 X0) (u3_msualg_1 \\ & X0 (k5_msafree2 X0 X1)) (u3_msualg_1 X0 (k5_msafree2 X0 X1)) (k3_circuit2 \\ & X0 X1 X2) X3) X4) \Rightarrow (k5_card_1 X4 = k5_card_1 X5))))))))) \end{aligned}$$