

t25_circcomb (TMajRvWdHWvXuWyRd- heDN7DnomqgYdkyn54)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $r1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funct_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $v3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_msualg_1 : \iota \Rightarrow \iota$ be given. Let $k6_finseq_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_msualg_1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0.((v1_relat_1 X0) \wedge ((v2_relat_1 X0) \wedge (v1_funct_1 X0))) \Rightarrow \\
 & (\forall X1.((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge (v1_funct_1 X1))) \Rightarrow \\
 & (\forall X2.(m1_subset_1 X2 (k4_card_3 X0)) \Rightarrow (\forall X3.(m1_subset_1 \\
 & X3 (k4_card_3 X1)) \Rightarrow (k1_funct_4 X2 X3 \in k4_card_3 (k1_funct_4 X0 \\
 & X1))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. ((l1_struct_0 X0) \wedge ((v4_msualg_1 X1 X0) \wedge \\
 & (l2_msualg_1 X1 X0))) \Rightarrow ((v1_relat_1 (u3_msualg_1 X0 X1)) \wedge ((v2_relat_1 \\
 & (u3_msualg_1 X0 X1)) \wedge ((v4_relat_1 (u3_msualg_1 X0 X1) (u1_struct_0 \\
 & X0)) \wedge ((v1_funct_1 (u3_msualg_1 X0 X1)) \wedge (v1_partfun1 (u3_msualg_1 \\
 & X0 X1) (u1_struct_0 X0))))))
 \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1_struct_0 X0)\wedge(l2_msualg_1 X1 X0))\Rightarrow \\ & ((v1_relat_1 (u3_msualg_1 X0 X1))\wedge((v4_relat_1 (u3_msualg_1 \\ & X0 X1) (u1_struct_0 X0))\wedge((v1_funct_1 (u3_msualg_1 X0 X1))\wedge(v1_partfun1 \\ & (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\Rightarrow(\forall X1. \\ & (l3_msualg_1 X1 X0)\Rightarrow(l2_msualg_1 X1 X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.(l1_msualg_1 X0)\Rightarrow(l5_struct_0 X0) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0)\wedge(l1_msualg_1 X0))\wedge(((\neg v2_struct_0 X1)\wedge(l1_msualg_1 X1))\wedge \\ & (((v4_msualg_1 X2 X0)\wedge(l3_msualg_1 X2 X0))\wedge((v4_msualg_1 X3 X1)\wedge \\ & (l3_msualg_1 X3 X1))))))\Rightarrow((v3_msualg_1 (k3_circcomb X0 X1 X2 X3) \\ & (k2_circcomb X0 X1))\wedge((v4_msualg_1 (k3_circcomb X0 X1 X2 X3) (k2_circcomb \\ & X0 X1))\wedge(l3_msualg_1 (k3_circcomb X0 X1 X2 X3) (k2_circcomb X0 X1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\Rightarrow(\forall X1. \\ & ((\neg v2_struct_0 X1)\wedge(l1_msualg_1 X1))\Rightarrow(\forall X2.((v4_msualg_1 \\ & X2 X0)\wedge(l3_msualg_1 X2 X0))\Rightarrow(\forall X3.((v4_msualg_1 X3 X1)\wedge \\ & (l3_msualg_1 X3 X1))\Rightarrow((r1_partfun1 (u3_msualg_1 X0 X2) (u3_msualg_1 \\ & X1 X3))\Rightarrow(\forall X4.((v3_msualg_1 X4 (k2_circcomb X0 X1))\wedge((v4_msualg_1 \\ & X4 (k2_circcomb X0 X1))\wedge(l3_msualg_1 X4 (k2_circcomb X0 X1))))))\Rightarrow \\ & ((X4 = k3_circcomb X0 X1 X2 X3)\Leftrightarrow((u3_msualg_1 (k2_circcomb X0 X1) \\ & X4 = k1_funct_4 (u3_msualg_1 X0 X2) (u3_msualg_1 X1 X3))\wedge(u4_msualg_1 \\ & (k2_circcomb X0 X1) X4 = k1_circcomb (u4_struct_0 X0) (k3_relat_1 \\ & (u1_msualg_1 X0) (k6_finseq_2 (u1_struct_0 X0) (u3_msualg_1 X0 \\ & X2))) (k3_relat_1 (u2_msualg_1 X0) (u3_msualg_1 X0 X2)) (u4_struct_0 \\ & X1) (k3_relat_1 (u1_msualg_1 X1) (k6_finseq_2 (u1_struct_0 X1) \\ & (u3_msualg_1 X1 X3))) (k3_relat_1 (u2_msualg_1 X1) (u3_msualg_1 \\ & X1 X3)) (u4_msualg_1 X0 X2) (u4_msualg_1 X1 X3))))))))) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2_struct_0 X1) \wedge (l1_msualg_1 X1)) \Rightarrow (\forall X2.((v4_msualg_1 \\ & X2 X0) \wedge (l3_msualg_1 X2 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (k4_card_3 \\ & (u3_msualg_1 X0 X2))) \Rightarrow (\forall X4.((v4_msualg_1 X4 X1) \wedge (l3_msualg_1 \\ & X4 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 (k4_card_3 (u3_msualg_1 X1 \\ & X4))) \Rightarrow ((r1_partfun1 (u3_msualg_1 X0 X2) (u3_msualg_1 X1 X4)) \Rightarrow \\ & (k1_funct_4 X3 X5 \in k4_card_3 (u3_msualg_1 (k2_circcomb X0 X1) (\\ & k3_circcomb X0 X1 X2 X4)))))))))) \end{aligned}$$