

t1_circcmb2 (TMRQFbh- swP4qLFqhbKZaYNrWPv5gsSULmqr)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_finset_1 : \iota \Rightarrow o$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v3_card_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_finseq_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k4_finseq_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k5_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_card_3 : \iota \Rightarrow \iota$ be given. Let $u3_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k7_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_circuit1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_relat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_msualg_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v1_msualg_1 : \iota \Rightarrow o$ be given. Let $v3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_msafree2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_circcomb : \iota \Rightarrow o$ be given. Let $v2_circcomb : \iota \Rightarrow o$ be given. Let $l3_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1_msualg_1 : \iota \Rightarrow o$ be given. Let $v2_msafree2 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v1_funct_1 X1) \wedge (v1_finseq_1 \\ & \quad X1))) \Rightarrow (\forall X2. (m1_subset_1 X2 (u4_struct_0 (k5_circcomb \\ & \quad X0 X1))) \Rightarrow ((X2 = k4_tarski X1 X0) \wedge ((k1_msualg_1 (k5_circcomb X0 \\ & \quad X1) X2 = X1) \wedge (k2_msualg_1 (k5_circcomb X0 X1) X2 = X2)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v1_funct_1 X1) \wedge (v1_finseq_1 \\ & \quad X1))) \Rightarrow ((\neg v2_struct_0 (k5_circcomb X0 X1)) \wedge ((\neg v11_struct_0 (\\ & \quad k5_circcomb X0 X1)) \wedge (v1_msualg_1 (k5_circcomb X0 X1)))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v7_ordinal1\ X0)\wedge \\ & (((\neg v1_xboole_0\ X1)\wedge(v1_finset_1\ X1))\wedge(((v1_funct_1\ X2)\wedge((\\ & v1_funct_2\ X2\ (k4_finseq_2\ X0\ X1)\ X1)\wedge(m1_subset_1\ X2\ (k1_zfmisc_1 \\ & (k2_zfmisc_1\ (k4_finseq_2\ X0\ X1)\ X1))))\wedge((v1_relat_1\ X3)\wedge((\\ & v1_funct_1\ X3)\wedge((v3_card_1\ X3\ X0)\wedge(v1_finseq_1\ X3))))))\Rightarrow((\\ & v3_msualg_1\ (k7_circcomb\ X0\ X1\ X2\ X3)\ (k5_circcomb\ X2\ X3))\wedge((v4_msualg_1 \\ & (k7_circcomb\ X0\ X1\ X2\ X3)\ (k5_circcomb\ X2\ X3))\wedge(v4_msafree2\ (k7_circcomb \\ & X0\ X1\ X2\ X3)\ (k5_circcomb\ X2\ X3)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1\ X1)\wedge((v1_funct_1\ X1)\wedge(v1_finseq_1 \\ & X1)))\Rightarrow((\neg v11_struct_0\ (k5_circcomb\ X0\ X1))\wedge((v1_msualg_1\ (k5_circcomb \\ & X0\ X1))\wedge((v1_circcomb\ (k5_circcomb\ X0\ X1))\wedge(v2_circcomb\ (k5_circcomb \\ & X0\ X1)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v7_ordinal1\ X0)\wedge \\ & ((\neg v1_xboole_0\ X1)\wedge(((v1_funct_1\ X2)\wedge((v1_funct_2\ X2\ (k4_finseq_2 \\ & X0\ X1)\ X1)\wedge(m1_subset_1\ X2\ (k1_zfmisc_1\ (k2_zfmisc_1\ (k4_finseq_2 \\ & X0\ X1)\ X1))))\wedge((v1_relat_1\ X3)\wedge((v1_funct_1\ X3)\wedge((v3_card_1 \\ & X3\ X0)\wedge(v1_finseq_1\ X3))))))\Rightarrow((v3_msualg_1\ (k7_circcomb\ X0 \\ & X1\ X2\ X3)\ (k5_circcomb\ X2\ X3))\wedge((v4_msualg_1\ (k7_circcomb\ X0\ X1 \\ & X2\ X3)\ (k5_circcomb\ X2\ X3))\wedge(l3_msualg_1\ (k7_circcomb\ X0\ X1\ X2\ X3) \\ & (k5_circcomb\ X2\ X3)))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1_relat_1\ X1)\wedge((v1_funct_1\ X1)\wedge(v1_finseq_1 \\ & X1)))\Rightarrow((\neg v11_struct_0\ (k5_circcomb\ X0\ X1))\wedge((v1_msualg_1\ (k5_circcomb \\ & X0\ X1))\wedge(l1_msualg_1\ (k5_circcomb\ X0\ X1)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0\ X0)\wedge((\neg v11_struct_0\ X0)\wedge((v2_msafree2 \\ & X0)\wedge(l1_msualg_1\ X0))))\Rightarrow(\forall X1.((v4_msualg_1\ X1\ X0)\wedge((\\ & v4_msafree2\ X1\ X0)\wedge(l3_msualg_1\ X1\ X0)))\Rightarrow(\forall X2.(m1_subset_1 \\ & X2\ (k4_card_3\ (u3_msualg_1\ X0\ X1)))\Rightarrow(\forall X3.(m1_subset_1 \\ & X3\ (u4_struct_0\ X0))\Rightarrow(k3_circuit1\ X0\ X1\ X2\ X3 = k3_relat_1\ (k1_msualg_1 \\ & X0\ X3\ X2)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_msualg_1\ X0)\Rightarrow(((\neg v2_struct_0\ X0)\wedge(v1_circcomb \\ & X0))\Rightarrow((\neg v2_struct_0\ X0)\wedge(v2_msafree2\ X0))) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v1_finset_1 X0)) \Rightarrow (\forall X1. \\ & (v7_ordinal1 X1) \Rightarrow (\forall X2.((v1_relat_1 X2) \wedge ((v1_funct_1 \\ & X2) \wedge ((v3_card_1 X2 X1) \wedge (v1_finseq_1 X2)))) \Rightarrow (\forall X3.((v1_funct_1 \\ & X3) \wedge ((v1_funct_2 X3 (k4_finseq_2 X1 X0) X0) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k4_finseq_2 X1 X0) X0)))) \Rightarrow (\forall X4.(m1_subset_1 \\ & X4 (u4_struct_0 (k5_circcomb X3 X2))) \Rightarrow (\forall X5.(m1_subset_1 \\ & X5 (k4_card_3 (u3_msualg_1 (k5_circcomb X3 X2) (k7_circcomb X1 \\ & X0 X3 X2)))) \Rightarrow (k3_circuit1 (k5_circcomb X3 X2) (k7_circcomb X1 X0 \\ & X3 X2) X5 X4 = k3_relat_1 X2 X5)))))) \end{aligned}$$