

t2_circcmb3 (TM- Fxm3w9M1fgh67FMVc3PirkCy4C9MMhuvk)

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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 $v4_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ 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 $v1_circcmb3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r8_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k1_circcmb3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_facirc_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_circcmb3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12_card_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_numbers : \iota$ be given. Let $k4_ordinal1 : \iota$ be given. Let $v4_funct_1 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_msualg_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l5_struct_0 : \iota \Rightarrow o$ be given. Let $v7_ordinal1 : \iota \Rightarrow o$ be given. Let $v1_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_xreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_relat_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (l1_msualg_1 X0)) \Rightarrow (\forall X1. \\ & ((v4_msualg_1 X1 X0) \wedge (l3_msualg_1 X1 X0)) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow (\forall X3. (m1_subset_1 \\ & X3 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow ((\forall X4. k1_funct_1 (\\ & k12_card_3 (u3_msualg_1 X0 X1) X4) X2 = k1_funct_1 (k12_card_3 (\\ & u3_msualg_1 X0 X1) X4) X3) \Rightarrow (r8_pboole (u1_struct_0 X0) X2 X3)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X0) \wedge (((v1_relat_1 \\ & X1) \wedge ((v4_relat_1 X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge \\ & ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 \\ & X2 X0)))))) \Rightarrow ((r8_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \quad (2)$$

Assume the following.

$$k5_numbers = k4_ordinal1 \quad (3)$$

Assume the following.

$$\forall X0.((v1_relat_1 X0)\wedge(v1_funct_1 X0))\Rightarrow(v4_funct_1 (k4_card_3 X0)) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_xboole_0 (u1_struct_0 X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1_struct_0 X0)\wedge(l2_msualg_1 X1 X0))\Rightarrow \\ & ((v1_relat_1 (u3_msualg_1 X0 X1))\wedge((v4_relat_1 (u3_msualg_1 \\ X0 X1) (u1_struct_0 X0))\wedge((v1_funct_1 (u3_msualg_1 X0 X1))\wedge(v1_partfun1 \\ (u3_msualg_1 X0 X1) (u1_struct_0 X0)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l5_struct_0 X0)\Rightarrow(l1_struct_0 X0) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_msualg_1 X0))\Rightarrow(\forall X1. (l3_msualg_1 X1 X0)\Rightarrow(l2_msualg_1 X1 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(l1_msualg_1 X0)\Rightarrow(l5_struct_0 X0) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_msafree2 X0)\wedge(l1_msualg_1 X0))))\wedge \\ & (((v4_msualg_1 X1 X0)\wedge((v4_msafree2 X1 X0)\wedge(l3_msualg_1 X1 X0)))\wedge \\ & ((m1_subset_1 X2 (k4_card_3 (u3_msualg_1 X0 X1)))\wedge(v7_ordinal1 \\ X3))))\Rightarrow(m1_subset_1 (k5_facirc_1 X0 X1 X2 X3) (k4_card_3 (u3_msualg_1 \\ X0 X1))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 \\ X0)\wedge((v2_msafree2 X0)\wedge(l1_msualg_1 X0))))\wedge(((v4_msualg_1 X1 \\ X0)\wedge((v4_msafree2 X1 X0)\wedge(l3_msualg_1 X1 X0)))\wedge(m1_subset_1 \\ X2 (k4_card_3 (u3_msualg_1 X0 X1))))\Rightarrow(m1_subset_1 (k2_circcmb3 \\ X0 X1 X2) k5_numbers) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 \\ & X0) \wedge ((v2_msafree2 X0) \wedge (l1_msualg_1 X0))) \wedge (((v4_msualg_1 X1 \\ & X0) \wedge ((v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \wedge (m1_subset_1 \\ & X2 (k4_card_3 (u3_msualg_1 X0 X1)))) \Rightarrow (m1_subset_1 (k1_circcmb3 \\ & X0 X1 X2) (k4_card_3 (u3_msualg_1 X0 X1))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & X0) \wedge (l1_msualg_1 X0))) \Rightarrow (\forall X1. ((v4_msualg_1 X1 X0) \wedge ((\\ & v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow ((v1_circcmb3 X2 X0 X1) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 k5_numbers) \Rightarrow ((X3 = k2_circcmb3 X0 X1 X2) \Leftrightarrow ((v1_circuit2 \\ & (k5_facirc_1 X0 X1 X2 X3) X0 X1) \wedge (\forall X4. (m1_subset_1 X4 k5_numbers) \Rightarrow \\ & (\neg(\neg r1_xreal_0 X3 X4) \wedge (v1_circuit2 (k5_facirc_1 X0 X1 X2 X4) X0 \\ & X1)))))))))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0. (((\neg v2_struct_0 X0) \wedge (\neg v11_struct_0 X0) \wedge ((v2_msafree2 \\ & X0) \wedge (l1_msualg_1 X0))) \Rightarrow (\forall X1. ((v4_msualg_1 X1 X0) \wedge ((\\ & v4_msafree2 X1 X0) \wedge (l3_msualg_1 X1 X0))) \Rightarrow (\forall X2. (m1_subset_1 \\ & X2 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow ((v1_circcmb3 X2 X0 X1) \Rightarrow (\forall X3. \\ & (m1_subset_1 X3 (k4_card_3 (u3_msualg_1 X0 X1))) \Rightarrow ((X3 = k1_circcmb3 \\ & X0 X1 X2) \Leftrightarrow ((v1_circuit2 X3 X0 X1) \wedge (\exists X4. (m1_subset_1 X4 k5_numbers) \wedge \\ & (r8_pboole (u1_struct_0 X0) X3 (k5_facirc_1 X0 X1 X2 X4)))))))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1_struct_0 X0) \Rightarrow (\forall X1. (l2_msualg_1 X1 X0) \Rightarrow \\ & ((v4_msualg_1 X1 X0) \Leftrightarrow (v2_relat_1 (u3_msualg_1 X0 X1)))) \end{aligned} \quad (15)$$

Assume the following.

$$\forall X0. (m1_subset_1 X0 k4_ordinal1) \Rightarrow (v7_ordinal1 X0) \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0. (v4_funct_1 X0) \Rightarrow (\forall X1. (m1_subset_1 X1 X0) \Rightarrow (\\ & (v1_relat_1 X1) \wedge (v1_funct_1 X1))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v2_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (k4_card_3 X1)) \Rightarrow (v1_partfun1 X2 X0)) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1_relat_1 X1)\wedge((v2_relat_1 X1)\wedge((v4_relat_1 \\ X1 X0)\wedge(v1_funct_1 X1))))\Rightarrow(\forall X2.(m1_subset_1 X2 (k4_card_3 \\ X1))\Rightarrow(v4_relat_1 X2 X0)) \end{aligned} \quad (19)$$

Theorem 1

$$\begin{aligned} \forall X0.((\neg v2_struct_0 X0)\wedge((\neg v11_struct_0 X0)\wedge((v2_msafree2 \\ X0)\wedge(l1_msualg_1 X0))))\Rightarrow(\forall X1.((v4_msualg_1 X1 X0)\wedge((\\ v4_msafree2 X1 X0)\wedge(l3_msualg_1 X1 X0)))\Rightarrow(\forall X2.(m1_subset_1 \\ X2 (k4_card_3 (u3_msualg_1 X0 X1)))\Rightarrow((v1_circcmb3 X2 X0 X1)\Rightarrow(r8_pboole \\ (u1_struct_0 X0) (k1_circcmb3 X0 X1 X2) (k5_facirc_1 X0 X1 X2 (k2_circcmb3 \\ X0 X1 X2)))))) \end{aligned}$$