

t4\_circcmb3  
(TMP9BUduxs4kgS7XNqAHcLxKCYUtsdicCbm)

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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  $k5\_numbers : \iota$  be given. Let  $v1\_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_facirc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k6\_circuit2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_circcmb3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_msafree2 \\ X0) \wedge (l1\_msualg\_1 X0)))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (( \\ v4\_msafree2 X1 X0) \wedge (l3\_msualg\_1 X1 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 \\ X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1))) \Rightarrow ((v1\_circuit2 X2 X0 X1) \Rightarrow (\forall X3. \\ (v7\_ordinal1 X3) \Rightarrow (k5\_facirc\_1 X0 X1 X2 X3 = X2)))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge ((v2\_msafree2 \\ X0) \wedge (l1\_msualg\_1 X0)))) \Rightarrow (\forall X1.((v4\_msualg\_1 X1 X0) \wedge (( \\ v4\_msafree2 X1 X0) \wedge (l3\_msualg\_1 X1 X0))) \Rightarrow (\forall X2.(m1\_subset\_1 \\ X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1))) \Rightarrow (k5\_facirc\_1 X0 X1 X2 np\_1 = \\ k6\_circuit2 X0 X1 X2))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} ((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge \\ ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers)) \end{aligned} \quad (3)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\ & X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_msafree2 X0)\wedge(l1\_msualg\_1 X0))))\wedge \\ & (((v4\_msualg\_1 X1 X0)\wedge((v4\_msafree2 X1 X0)\wedge(l3\_msualg\_1 X1 X0))))\wedge \\ & ((m1\_subset\_1 X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\wedge(v7\_ordinal1 \\ & X3))))\Rightarrow(m1\_subset\_1 (k5\_facirc\_1 X0 X1 X2 X3) (k4\_card\_3 (u3\_msualg\_1 \\ & X0 X1))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_msafree2 \\ & X0)\wedge(l1\_msualg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 X1 X0)\wedge(( \\ & v4\_msafree2 X1 X0)\wedge(l3\_msualg\_1 X1 X0))))\Rightarrow(\forall X2.(m1\_subset\_1 \\ & X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\Rightarrow((v1\_circuit2 X2 X0 X1)\Leftrightarrow(r8\_pboole \\ & (u1\_struct\_0 X0) X2 (k6\_circuit2 X0 X1 X2)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_msafree2 \\ & X0)\wedge(l1\_msualg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 X1 X0)\wedge(( \\ & v4\_msafree2 X1 X0)\wedge(l3\_msualg\_1 X1 X0))))\Rightarrow(\forall X2.(m1\_subset\_1 \\ & X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\Rightarrow((v1\_circcmb3 X2 X0 X1)\Rightarrow(\forall X3. \\ & (m1\_subset\_1 X3 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\Rightarrow((X3 = k1\_circcmb3 \\ & X0 X1 X2)\Leftrightarrow((v1\_circuit2 X3 X0 X1)\wedge(\exists X4.(m1\_subset\_1 X4 k5\_numbers)\wedge \\ & (r8\_pboole (u1\_struct\_0 X0) X3 (k5\_facirc\_1 X0 X1 X2 X4)))))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_msafree2 \\ & X0)\wedge(l1\_msualg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 X1 X0)\wedge(( \\ & v4\_msafree2 X1 X0)\wedge(l3\_msualg\_1 X1 X0))))\Rightarrow(\forall X2.(m1\_subset\_1 \\ & X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\Rightarrow((v1\_circcmb3 X2 X0 X1)\Leftrightarrow(\exists X3. \\ & (m1\_subset\_1 X3 k5\_numbers)\wedge(v1\_circuit2 (k5\_facirc\_1 X0 X1 X2 \\ & X3) X0 X1)))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1)\Rightarrow(v7\_ordinal1 X0) \quad (9)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0)\wedge((\neg v11\_struct\_0 X0)\wedge((v2\_msafree2 \\ & X0)\wedge(l1\_msualg\_1 X0))))\Rightarrow(\forall X1.((v4\_msualg\_1 X1 X0)\wedge(( \\ & v4\_msafree2 X1 X0)\wedge(l3\_msualg\_1 X1 X0))))\Rightarrow(\forall X2.(m1\_subset\_1 \\ & X2 (k4\_card\_3 (u3\_msualg\_1 X0 X1)))\Rightarrow(\forall X3.(m1\_subset\_1 \\ & X3 k5\_numbers)\Rightarrow((v1\_circuit2 (k5\_facirc\_1 X0 X1 X2 X3) X0 X1)\Rightarrow( \\ & r8\_pboole (u1\_struct\_0 X0) (k1\_circcmb3 X0 X1 X2) (k5\_facirc\_1 \\ & X0 X1 X2 X3)))))) \end{aligned}$$