

t52\_circcomb  
(TMbD6fN1inTmgaEhYo8D49WVPm74LyHpbtm)

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Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  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  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $v4\_circcomb : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v5\_circcomb : \iota \Rightarrow o$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  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  $l3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $r8\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $u3\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u4\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.\forall X1.(k1\_xtuple\_0 (k4\_tarski X0 X1) = X0) \wedge (k2\_xtuple\_0 (k4\_tarski X0 X1) = X1) \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 (k5\_circcomb X0 X1))) \Rightarrow ((X2 = k4\_tarski X1 X0) \wedge ((k1\_msualg\_1 (k5\_circcomb X0 X1) X2 = X1) \wedge (k2\_msualg\_1 (k5\_circcomb X0 X1) X2 = X2)))) \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow ((\neg v2\_struct\_0 (k5\_circcomb X0 X1)) \wedge ((\neg v11\_struct\_0 (k5\_circcomb X0 X1)) \wedge (v1\_msualg\_1 (k5\_circcomb X0 X1)))) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((v7\_ordinal1\ X0)\wedge \\ & ((\neg v1\_xboole\_0\ X1)\wedge(((v1\_funct\_1\ X2)\wedge((v1\_funct\_2\ X2\ (k4\_finseq\_2 \\ & X0\ X1)\ X1)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2 \\ & X0\ X1)\ X1))))))\wedge((v1\_relat\_1\ X3)\wedge((v1\_funct\_1\ X3)\wedge((v3\_card\_1 \\ & X3\ X0)\wedge(v1\_finseq\_1\ X3))))))\Rightarrow((v3\_msualg\_1\ (k7\_circcomb\ X0 \\ & X1\ X2\ X3)\ (k5\_circcomb\ X2\ X3))\wedge((v4\_msualg\_1\ (k7\_circcomb\ X0\ X1 \\ & X2\ X3)\ (k5\_circcomb\ X2\ X3))\wedge(l3\_msualg\_1\ (k7\_circcomb\ X0\ X1\ X2\ X3) \\ & (k5\_circcomb\ X2\ X3)))) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1\ X1)\wedge((v1\_funct\_1\ X1)\wedge(v1\_finseq\_1 \\ & X1)))\Rightarrow((\neg v11\_struct\_0\ (k5\_circcomb\ X0\ X1))\wedge((v1\_msualg\_1\ (k5\_circcomb \\ & X0\ X1))\wedge(l1\_msualg\_1\ (k5\_circcomb\ X0\ X1)))) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0.(v7\_ordinal1\ X0)\Rightarrow(\forall X1.(\neg v1\_xboole\_0\ X1)\Rightarrow( \\ & \forall X2.((v1\_funct\_1\ X2)\wedge((v1\_funct\_2\ X2\ (k4\_finseq\_2\ X0\ X1) \\ & X1)\wedge(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2\ X0 \\ & X1)\ X1))))))\Rightarrow(\forall X3.((v1\_relat\_1\ X3)\wedge((v1\_funct\_1\ X3)\wedge( \\ & (v3\_card\_1\ X3\ X0)\wedge(v1\_finseq\_1\ X3))))\Rightarrow(\forall X4.((v3\_msualg\_1 \\ & X4\ (k5\_circcomb\ X2\ X3))\wedge((v4\_msualg\_1\ X4\ (k5\_circcomb\ X2\ X3))\wedge \\ & (l3\_msualg\_1\ X4\ (k5\_circcomb\ X2\ X3))))\Rightarrow((X4 = k7\_circcomb\ X0\ X1 \\ & X2\ X3)\Leftrightarrow((r8\_pboole\ (u1\_struct\_0\ (k5\_circcomb\ X2\ X3))\ (u3\_msualg\_1 \\ & (k5\_circcomb\ X2\ X3)\ X4)\ (k7\_funcop\_1\ (u1\_struct\_0\ (k5\_circcomb \\ & X2\ X3))\ X1))\wedge(k1\_funct\_1\ (u4\_msualg\_1\ (k5\_circcomb\ X2\ X3)\ X4)\ ( \\ & k4\_tarski\ X3\ X2) = X2)))))) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow((v5\_circcomb \\ & X0)\Leftrightarrow(\exists X1.(l3\_msualg\_1\ X1\ X0)\wedge(v4\_circcomb\ X1\ X0))) \end{aligned} \tag{8}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_msualg\_1\ X0))\Rightarrow(\forall X1. \\ & (l3\_msualg\_1\ X1\ X0)\Rightarrow((v4\_circcomb\ X1\ X0)\Leftrightarrow(\forall X2.(X2 \in u4\_struct\_0 \\ & X0)\Rightarrow(X2 = k4\_tarski\ (k1\_xtuple\_0\ X2)\ (k1\_funct\_1\ (u4\_msualg\_1 \\ & X0\ X1)\ X2)))))) \end{aligned} \tag{9}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v7\_ordinal1\ X0) \Rightarrow (\forall X1.(\neg v1\_xboole\_0\ X1) \Rightarrow ( \\ & \quad \forall X2.((v1\_funct\_1\ X2) \wedge ((v1\_funct\_2\ X2\ (k4\_finseq\_2\ X0\ X1) \\ & \quad X1) \wedge (m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k4\_finseq\_2\ X0 \\ & \quad X1)\ X1)))))) \Rightarrow (\forall X3.((v1\_relat\_1\ X3) \wedge ((v1\_funct\_1\ X3) \wedge ( \\ & \quad (v3\_card\_1\ X3\ X0) \wedge (v1\_finseq\_1\ X3)))))) \Rightarrow ((v4\_circcomb\ (k7\_circcomb \\ & \quad X0\ X1\ X2\ X3)\ (k5\_circcomb\ X2\ X3)) \wedge (v5\_circcomb\ (k5\_circcomb\ X2\ X3)))))) \end{aligned}$$