

## t39\_circcomb

(TMZqdS2G4dpwa7gWAhrTW7cx6kXePVN7eN)

October 27, 2020

Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k5\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_msualg\_1 : \iota \Rightarrow \iota$  be given. Let  $u2\_msualg\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 \\ & X1))) \Rightarrow ((\neg v11\_struct\_0 (k5\_circcomb X0 X1)) \wedge ((v1\_msualg\_1 (k5\_circcomb \\ & X0 X1)) \wedge (l1\_msualg\_1 (k5\_circcomb X0 X1)))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 \\ & X1))) \Rightarrow (\forall X2. ((\neg v11\_struct\_0 X2) \wedge ((v1\_msualg\_1 X2) \wedge (l1\_msualg\_1 \\ & X2))) \Rightarrow ((X2 = k5\_circcomb X0 X1) \Leftrightarrow ((u1\_struct\_0 X2 = k2\_xboole\_0 \\ & (k10\_xtuple\_0 X1) (k1\_tarski (k4\_tarski X1 X0))) \wedge ((u4\_struct\_0 \\ & X2 = k1\_tarski (k4\_tarski X1 X0)) \wedge ((k1\_funct\_1 (u1\_msualg\_1 X2) \\ & (k4\_tarski X1 X0) = X1) \wedge (k1\_funct\_1 (u2\_msualg\_1 X2) (k4\_tarski \\ & X1 X0) = k4\_tarski X1 X0)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 \\ & X1))) \Rightarrow (\forall X2. \forall X3. ((\neg v11\_struct\_0 X3) \wedge ((v1\_msualg\_1 \\ & X3) \wedge (l1\_msualg\_1 X3))) \Rightarrow ((X3 = k4\_circcomb X0 X1 X2) \Leftrightarrow ((u1\_struct\_0 \\ & X3 = k2\_xboole\_0 (k10\_xtuple\_0 X1) (k1\_tarski X2)) \wedge ((u4\_struct\_0 \\ & X3 = k1\_tarski (k4\_tarski X1 X0)) \wedge ((k1\_funct\_1 (u1\_msualg\_1 X3) \\ & (k4\_tarski X1 X0) = X1) \wedge (k1\_funct\_1 (u2\_msualg\_1 X3) (k4\_tarski \\ & X1 X0) = X2)))))) \end{aligned} \tag{3}$$

**Theorem 1**

$$\forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1))) \Rightarrow (k5\_circcomb X0 X1 = k4\_circcomb X0 X1 (k4\_tarski X1 X0))$$