

## t16\_circcomb

(TML3hsReydmUw5KGoqFcoYVVy5LtnwhNhSw)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v11\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_msualg\_1 : \iota \Rightarrow o$  be given. Let  $r1\_circcomb : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_circcomb : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_msualg\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_msualg\_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (l1\_msualg\_1 X1)) \Rightarrow ((r1\_circcomb X0 X1) \Rightarrow ( \\ & \quad k2\_circcomb X0 X1 = k2\_circcomb X1 X0))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_msualg\_1 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge ((\neg v11\_struct\_0 X1) \wedge (l1\_msualg\_1 X1))) \Rightarrow \\ & (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 X1)) \Rightarrow (\forall X3.(m1\_subset\_1 \\ & X3 (u4\_struct\_0 (k2\_circcomb X0 X1))) \Rightarrow ((X2 = X3) \Rightarrow ((k1\_msualg\_1 \\ & (k2\_circcomb X0 X1) X3 = k1\_msualg\_1 X1 X2) \wedge (k2\_msualg\_1 (k2\_circcomb \\ & \quad X0 X1) X3 = k2\_msualg\_1 X1 X2)))))) \end{aligned} \quad (2)$$

### Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v11\_struct\_0 X0) \wedge (l1\_msualg\_1 \\ & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (l1\_msualg\_1 X1)) \Rightarrow ((r1\_circcomb \\ & X0 X1) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u4\_struct\_0 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u4\_struct\_0 (k2\_circcomb X0 X1))) \Rightarrow ((X2 = X3) \Rightarrow \\ & ((k1\_msualg\_1 (k2\_circcomb X0 X1) X3 = k1\_msualg\_1 X0 X2) \wedge (k2\_msualg\_1 \\ & \quad (k2\_circcomb X0 X1) X3 = k2\_msualg\_1 X0 X2)))))) \end{aligned}$$