

## t71\_monoid\_0

(TMN1z6SRXhGucZrmsJGzCBYTXjeLTy2Qwpg)

October 27, 2020

Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $m2\_monoid\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k12\_monoid\_0 : \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_partfun1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_group\_1 : \iota \Rightarrow o$  be given. Let  $k4\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u2\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v15\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v1\_monoid\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. k4\_binop\_1 (u1\_struct\_0 (k12\_monoid\_0 X0)) (u2\_algstr\_0 (k12\_monoid\_0 X0)) = k6\_partfun1 X0 \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l3\_algstr\_0 X0)) \Rightarrow (\forall X1. \\ & ((\neg v2\_struct\_0 X1) \wedge (m2\_monoid\_0 X1 X0)) \Rightarrow (((v1\_group\_1 X0) \wedge \\ & k4\_binop\_1 (u1\_struct\_0 X0) (u2\_algstr\_0 X0) \in u1\_struct\_0 X1)) \Rightarrow \\ & ((v1\_group\_1 X1) \wedge (k4\_binop\_1 (u1\_struct\_0 X0) (u2\_algstr\_0 X0) = \\ & k4\_binop\_1 (u1\_struct\_0 X1) (u2\_algstr\_0 X1)))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v2\_struct\_0 (k12\_monoid\_0 X0)) \wedge ((v15\_algstr\_0 \\ & (k12\_monoid\_0 X0)) \wedge ((v1\_group\_1 (k12\_monoid\_0 X0)) \wedge ((v3\_group\_1 \\ & (k12\_monoid\_0 X0)) \wedge (v1\_monoid\_0 (k12\_monoid\_0 X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. (l3\_algstr\_0 X0) \Rightarrow (\forall X1. (m2\_monoid\_0 X1 X0) \Rightarrow (l3\_algstr\_0 X1)) \quad (5)$$

Assume the following.

$$\forall X0.(l3\_algstr\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (6)$$

Assume the following.

$$\forall X0.(v15\_algstr\_0 (k12\_monoid\_0 X0)) \wedge ((v1\_monoid\_0 (k12\_monoid\_0 X0)) \wedge (l3\_algstr\_0 (k12\_monoid\_0 X0))) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.((\neg v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow (X1 \in X0))) \wedge ((v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow (v1\_xboole\_0 X1))) \quad (8)$$

**Theorem 1**

$$\forall X0.\forall X1.((\neg v2\_struct\_0 X1) \wedge (m2\_monoid\_0 X1 (k12\_monoid\_0 X0))) \Rightarrow ((m1\_subset\_1 (k6\_partfun1 X0) (u1\_struct\_0 X1)) \Rightarrow ((v1\_group\_1 X1) \wedge (k4\_binop\_1 (u1\_struct\_0 X1) (u2\_algstr\_0 X1) = k6\_partfun1 X0)))$$