

t67\_monoid\_0 (TMVKVU-  
GRzUoRSa1G32MCcQLBKCKaTGLL2Cb)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_setwiseo : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k11\_monoid\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_finseq\_2 : \iota \Rightarrow \iota$  be given. Let  $k4\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_monoid\_0 : \iota \Rightarrow \iota$  be given. Let  $u2\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_group\_1 : \iota \Rightarrow o$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  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  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v15\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_monoid\_0 : \iota \Rightarrow o$  be given. Let  $v16\_monoid\_0 : \iota \Rightarrow o$  be given. Let  $v17\_monoid\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (k4\_binop\_1 (u1\_struct\_0 (k9\_monoid\_0 X0)) (u2\_algstr\_0 (k9\_monoid\_0 X0)) = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v1\_group\_1 X0) \wedge (l3\_algstr\_0 X0))) \Rightarrow ((v1\_funct\_1 (u2\_algstr\_0 X0)) \wedge ((v1\_funct\_2 (u2\_algstr\_0 X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (v1\_setwiseo (u2\_algstr\_0 X0) (u1\_struct\_0 X0)))) \quad (2)$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_group\_1 X0) \wedge (l3\_algstr\_0 X0))) \Rightarrow ((v1\_funct\_1 (u2\_algstr\_0 X0)) \wedge ((v1\_funct\_2 (u2\_algstr\_0 X0) (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (v2\_binop\_1 (u2\_algstr\_0 X0) (u1\_struct\_0 X0)))) \quad (3)$$

Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow ((\neg v2\_struct\_0 (k9\_monoid\_0 X0)) \wedge ((v15\_algstr\_0 (k9\_monoid\_0 X0)) \wedge ((v1\_group\_1 (k9\_monoid\_0 X0)) \wedge ((v3\_group\_1 (k9\_monoid\_0 X0)) \wedge ((v2\_monoid\_0 (k9\_monoid\_0 X0)) \wedge ((v16\_monoid\_0 (k9\_monoid\_0 X0)) \wedge ((v17\_monoid\_0 (k9\_monoid\_0 X0)) \wedge (l3\_algstr\_0 (k9\_monoid\_0 X0)))))))))) \quad (4)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (k11\_monoid\_0 X0 = u2\_algstr\_0 (k9\_monoid\_0 X0)) \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow & (\forall X1.((\neg v2\_struct\_0 X1) \wedge \\ & ((v15\_algstr\_0 X1) \wedge ((v1\_group\_1 X1) \wedge ((v3\_group\_1 X1) \wedge ((v2\_monoid\_0 \\ & X1) \wedge ((v16\_monoid\_0 X1) \wedge ((v17\_monoid\_0 X1) \wedge (l3\_algstr\_0 X1))))))) \Rightarrow \\ & ((X1 = k9\_monoid\_0 X0) \Leftrightarrow ((u1\_struct\_0 X1 = k3\_finseq\_2 X0) \wedge (\forall X2. \\ & (m1\_subset\_1 X2 (u1\_struct\_0 X1)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\ & (u1\_struct\_0 X1)) \Rightarrow (k6\_algstr\_0 X1 X2 X3 = k7\_finseq\_1 X2 X3)))))) \end{aligned} \quad (6)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow & ((v1\_setwiseo (k11\_monoid\_0 X0) \\ & (k3\_finseq\_2 X0)) \wedge ((k4\_binop\_1 (k3\_finseq\_2 X0) (k11\_monoid\_0 \\ & X0) = k1\_xboole\_0) \wedge (v2\_binop\_1 (k11\_monoid\_0 X0) (k3\_finseq\_2 \\ & X0)))) \end{aligned}$$