

## t31\_monoid\_1

(TMcn4kM2YReXFpnzUvc2aKJtY76CXvmMhE3)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k15\_monoid\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k18\_monoid\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k6\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $k16\_monoid\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_funct\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k13\_monoid\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (1)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X1 X0)) \Rightarrow (k6\_domain\_1 X0 X1 = k1\_tarski X1) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. k16\_monoid\_1 X0 X1 = k4\_funct\_3 X0 X1 \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 (k13\_monoid\_1 X0))) \wedge (m1\_subset\_1 X2 X0))) \Rightarrow (k15\_monoid\_1 X0 X1 X2 = k1\_funct\_1 X1 X2) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. (v1\_relat\_1 (k4\_funct\_3 X0 X1)) \wedge (v1\_funct\_1 (k4\_funct\_3 X0 X1)) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.m1\_subset\_1 (k16\_monoid\_1 X0 X1) (u1\_struct\_0 (k13\_monoid\_1 X1)) \quad (7)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow (k18\_monoid\_1 X0 X1 = k16\_monoid\_1 (k6\_domain\_1 X0 X1) X0)) \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((v1\_relat\_1 X2) \wedge (v1\_funct\_1 X2)) \Rightarrow ((X2 = k4\_funct\_3 X0 X1) \Leftrightarrow ((k9\_xtuple\_0 X2 = X1) \wedge (\forall X3. (X3 \in X1) \Rightarrow (((X3 \in X0) \Rightarrow (k1\_funct\_1 X2 X3 = np\_1)) \wedge ((\neg X3 \in X0) \Rightarrow (k1\_funct\_1 X2 X3 = k1\_xboole\_0)))))) \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(X1 = k1\_tarski X0) \Leftrightarrow (\forall X2.(X2 \in X1) \Leftrightarrow (X2 = X0)) \quad (10)$$

**Theorem 1**

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 X0) \Rightarrow ((k15\_monoid\_1 X0 (k18\_monoid\_1 X0 X1) X1 = np\_1) \wedge ((X2 \neq X1) \Rightarrow (k15\_monoid\_1 X0 (k18\_monoid\_1 X0 X1) X2 = k6\_numbers))))))$$