

# t32\_monoid\_1

(TMLCM2Q28vHbA7uF12pe9MZVnqjoCi119Wn)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k13\_monoid\_1 : \iota \Rightarrow \iota$  be given. Let  $k15\_monoid\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k10\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (((k9\_xtuple\_0 X0 = k9\_xtuple\_0 \\ X1) \wedge (\forall X2.(X2 \in k9\_xtuple\_0 X0) \Rightarrow (k1\_funct\_1 X0 X2 = k1\_funct\_1 \\ X1 X2)))) \Rightarrow (X0 = X1))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 (k13\_monoid\_1 X0))) \Rightarrow ((k9\_xtuple\_0 X1 = X0) \wedge (r1\_tarski (k10\_xtuple\_0 X1) k5\_numbers)) \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 (u1\_struct\_0 (k13\_monoid\_1 X1))) \Leftrightarrow ((v1\_funct\_1 X0) \wedge ((v1\_funct\_2 X0 X1 k5\_numbers) \wedge (m1\_subset\_1 X0 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X1 k5\_numbers))))) \tag{3}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 (k13\_monoid\_1 X0))) \wedge (m1\_subset\_1 X2 X0))) \Rightarrow (k15\_monoid\_1 X0 X1 X2 = k1\_funct\_1 X1 X2) \tag{4}$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow (X1 \in X0))) \wedge ((v1\_xboole\_0 X0) \Rightarrow ((m1\_subset\_1 X1 X0) \Leftrightarrow (v1\_xboole\_0 X1))) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))\Rightarrow(v1\_relat\_1 X2) \quad (6)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ (k13\_monoid\_1 X0)))\Rightarrow(\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ (k13\_monoid\_1 X0)))\Rightarrow((\forall X3.(m1\_subset\_1 X3 X0)\Rightarrow(k15\_monoid\_1 \\ X0 X1 X3 = k15\_monoid\_1 X0 X2 X3))\Rightarrow(X1 = X2)))) \end{aligned}$$