t57_monoid_1 (TMcFNt62U3Eoi1SosGDSYiKXFpLojSR1AbS)

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Let $v2\_struct\_0 : \iota \Rightarrow o$ be given. Let $l3\_algstr\_0 : \iota \Rightarrow o$ be given. Let $v5\_group\_1 : \iota \Rightarrow o$ be given. Let $k22\_monoid\_1 : \iota \Rightarrow \iota$ be given. Let $v3\_group\_1 : \iota \Rightarrow o$ be given. Let $v17\_monoid\_0 : \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ be given. Let $r1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2\_algstr\_0 : \iota \Rightarrow \iota$ be given. Let $k21\_monoid\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1\_xboole\_0 : \iota \Rightarrow o$ 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 $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v9\_monoid\_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $l1\_struct\_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l3\_algstr\_0\ X0)) \Rightarrow ((u1\_struct\_0\ (k22\_monoid\_1\ X0) = k1\_zfmisc\_1\ (u1\_struct\_0\ X0)) \wedge (r1\_funct\_2\ (k2\_zfmisc\_1\ (u1\_struct\_0\ (k22\_monoid\_1\ X0))\ (u1\_struct\_0\ (k22\_monoid\_1\ X0)))\ (u1\_struct\_0\ (k22\_monoid\_1\ X0))\ (k2\_zfmisc\_1\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0)))\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X0))\ (u2\_algstr\_0\ (k22\_monoid\_1\ X0))\ (k21\_monoid\_1\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0)\ (u1\_struct\_0\ X0)\ (u2\_algstr\_0\ X0)))) \tag{1}$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0\ X0) \Rightarrow (\forall X1.((v1\_funct\_1\ X1) \wedge ((v1\_funct\_2\ X1\ (k2\_zfmisc\_1\ X0\ X0)\ X0) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X0)\ X0))))) \Rightarrow ((v9\_monoid\_0\ X1\ X0) \Rightarrow (v9\_monoid\_0\ (k21\_monoid\_1\ X0\ X0\ X0\ X1)\ (k1\_zfmisc\_1\ X0)))) \tag{2}$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0\ X0) \Rightarrow (\forall X1.((v1\_funct\_1\ X1) \wedge ((v1\_funct\_2\ X1\ (k2\_zfmisc\_1\ X0\ X0)\ X0) \wedge (m1\_subset\_1\ X1\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X0)\ X0))))) \Rightarrow ((v2\_binop\_1\ X1\ X0) \Rightarrow (v2\_binop\_1\ (k21\_monoid\_1\ X0\ X0\ X0\ X1)\ (k1\_zfmisc\_1\ X0)))) \tag{3}$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0\ X0)\Rightarrow(\forall X1.((v1\_funct\_1\ X1)\wedge(\\(v1\_funct\_2\ X1\ (k2\_zfmisc\_1\ X0\ X0)\ X0)\wedge(m1\_subset\_1\ X1\ (k1\_zfmisc\_1\\(k2\_zfmisc\_1\ (k2\_zfmisc\_1\ X0\ X0)\ X0)))))\Rightarrow((v1\_binop\_1\ X1\ X0)\Rightarrow\\(v1\_binop\_1\ (k21\_monoid\_1\ X0\ X0\ X0\ X1)\ (k1\_zfmisc\_1\ X0))))) \tag{4}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.\forall X5.\\((\neg v1\_xboole\_0\ X1)\wedge((\neg v1\_xboole\_0\ X3)\wedge(((v1\_funct\_1\ X4)\wedge((\\v1\_funct\_2\ X4\ X0\ X1)\wedge(m1\_subset\_1\ X4\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\\X0\ X1)))))\wedge((v1\_funct\_1\ X5)\wedge((v1\_funct\_2\ X5\ X2\ X3)\wedge(m1\_subset\_1\\X5\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ X2\ X3)))))))\Rightarrow((r1\_funct\_2\ X0\ X1\\X2\ X3\ X4\ X5)\Leftrightarrow(X4=X5)) \tag{5}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow(\neg v2\_struct\_0\\(k22\_monoid\_1\ X0)) \tag{6}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l1\_struct\_0\ X0))\Rightarrow(\neg v1\_xboole\_0\\(u1\_struct\_0\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.(l3\_algstr\_0\ X0)\Rightarrow((v1\_funct\_1\ (u2\_algstr\_0\ X0))\wedge\\((v1\_funct\_2\ (u2\_algstr\_0\ X0)\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (\\u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ (u2\_algstr\_0\\X0)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X0)\ (\\u1\_struct\_0\ X0))\ (u1\_struct\_0\ X0)))))) \tag{8}$$

Assume the following.

$$\forall X0.(l3\_algstr\_0\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{9}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow(l3\_algstr\_0\\(k22\_monoid\_1\ X0)) \tag{10}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0\ X0)\wedge\\((\neg v1\_xboole\_0\ X1)\wedge((\neg v1\_xboole\_0\ X2)\wedge((v1\_funct\_1\ X3)\wedge((v1\_funct\_2\\X3\ (k2\_zfmisc\_1\ X0\ X1)\ X2)\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\\(k2\_zfmisc\_1\ X0\ X1)\ X2))))))))\Rightarrow((v1\_funct\_1\ (k21\_monoid\_1\ X0\\X1\ X2\ X3))\wedge((v1\_funct\_2\ (k21\_monoid\_1\ X0\ X1\ X2\ X3)\ (k2\_zfmisc\_1\\(k1\_zfmisc\_1\ X0)\ (k1\_zfmisc\_1\ X1))\ (k1\_zfmisc\_1\ X2))\wedge(m1\_subset\_1\\(k21\_monoid\_1\ X0\ X1\ X2\ X3)\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\\(k1\_zfmisc\_1\ X0)\ (k1\_zfmisc\_1\ X1))\ (k1\_zfmisc\_1\ X2)))))) \tag{11}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow((v17\_monoid\_0\ X0)\Leftrightarrow(v9\_monoid\_0\ (u2\_algstr\_0\ X0)\ (u1\_struct\_0\ X0))) \tag{12}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow((v3\_group\_1\ X0)\Leftrightarrow(v2\_binop\_1\ (u2\_algstr\_0\ X0)\ (u1\_struct\_0\ X0))) \tag{13}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow((v5\_group\_1\ X0)\Leftrightarrow(v1\_binop\_1\ (u2\_algstr\_0\ X0)\ (u1\_struct\_0\ X0))) \tag{14}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow(((v5\_group\_1\ X0)\Rightarrow(v5\_group\_1\ (k22\_monoid\_1\ X0)))\wedge(((v3\_group\_1\ X0)\Rightarrow(v3\_group\_1\ (k22\_monoid\_1\ X0)))\wedge((v17\_monoid\_0\ X0)\Rightarrow(v17\_monoid\_0\ (k22\_monoid\_1\ X0)))))$$