

# t51\_zmodul01 (TMKkzH- WWTtGEM6xnRHCULY48rKgrVieaQyN)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v2\_zmodul01 : \iota \Rightarrow o$  be given. Let  $v3\_zmodul01 : \iota \Rightarrow o$  be given. Let  $v4\_zmodul01 : \iota \Rightarrow o$  be given. Let  $v5\_zmodul01 : \iota \Rightarrow o$  be given. Let  $l1\_zmodul01 : \iota \Rightarrow o$  be given. Let  $m1\_zmodul01 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_zmodul01 : \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_domain\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_zmodul01 : \iota \Rightarrow o$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_realset1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_zmodul01 : \iota \Rightarrow \iota$  be given. Let  $k2\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_numbers : \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\
& ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\
& X0)))))))))) \Rightarrow (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 \\
& X1) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge \\
& ((v2\_zmodul01 X1) \wedge ((v3\_zmodul01 X1) \wedge ((v4\_zmodul01 X1) \wedge ((v5\_zmodul01 \\
& X1) \wedge (l1\_zmodul01 X1)))))))))) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 X2) \wedge \\
& ((v13\_algstr\_0 X2) \wedge ((v2\_rlvect\_1 X2) \wedge ((v3\_rlvect\_1 X2) \wedge ((v4\_rlvect\_1 \\
& X2) \wedge ((v2\_zmodul01 X2) \wedge ((v3\_zmodul01 X2) \wedge ((v4\_zmodul01 X2) \wedge \\
& ((v5\_zmodul01 X2) \wedge (l1\_zmodul01 X2)))))))))) \Rightarrow (((m1\_zmodul01 \\
& X0 X1) \wedge (m1\_zmodul01 X1 X2)) \Rightarrow (m1\_zmodul01 X0 X2)))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge (m1\_subset\_1 X1 X0)) \Rightarrow (k6\_domain\_1 X0 X1 = k1\_tarski X1) \tag{2}$$

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.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\ & ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\ & X0)))))))))) \Rightarrow (\forall X1.(m1\_zmodul01 X1 X0) \Rightarrow ((\neg v2\_struct\_0 \\ & X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge \\ & ((v4\_rlvect\_1 X1) \wedge ((v2\_zmodul01 X1) \wedge ((v3\_zmodul01 X1) \wedge ((v4\_zmodul01 \\ & X1) \wedge ((v5\_zmodul01 X1) \wedge (l1\_zmodul01 X1))))))))))) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (5)$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1\_zmodul01 X0) \Rightarrow (l2\_algstr\_0 X0) \quad (7)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (k4\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\ & X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\ & ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\ & X0)))))))))) \Rightarrow ((v1\_zmodul01 (k3\_zmodul01 X0)) \wedge (m1\_zmodul01 \\ & (k3\_zmodul01 X0) X0)) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\
& ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\
& X0)))))))))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 \\
& X1) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge \\
& ((v2\_zmodul01 X1) \wedge ((v3\_zmodul01 X1) \wedge ((v4\_zmodul01 X1) \wedge ((v5\_zmodul01 \\
& X1) \wedge (l1\_zmodul01 X1)))))))))) \Rightarrow ((m1\_zmodul01 X1 X0) \Leftrightarrow ((r1\_tarski \\
& (u1\_struct\_0 X1) (u1\_struct\_0 X0)) \wedge ((k4\_struct\_0 X1 = k4\_struct\_0 \\
& X0) \wedge ((u1\_algstr\_0 X1 = k1\_realset1 (u1\_algstr\_0 X0) (u1\_struct\_0 \\
& X1)) \wedge (u1\_zmodul01 X1 = k2\_partfun1 (k2\_zfmisc.1 k4\_numbers (u1\_struct\_0 \\
& X0)) (u1\_struct\_0 X0) (u1\_zmodul01 X0) (k2\_zfmisc.1 k4\_numbers \\
& (u1\_struct\_0 X1))))))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\
& ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\
& X0)))))))))) \Rightarrow (\forall X1.((v1\_zmodul01 X1) \wedge (m1\_zmodul01 X1 \\
& X0)) \Rightarrow ((X1 = k3\_zmodul01 X0) \Leftrightarrow (u1\_struct\_0 X1 = k6\_domain.1 (u1\_struct\_0 \\
& X0) (k4\_struct\_0 X0))))
\end{aligned} \tag{11}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v2\_zmodul01 X0) \wedge \\
& ((v3\_zmodul01 X0) \wedge ((v4\_zmodul01 X0) \wedge ((v5\_zmodul01 X0) \wedge (l1\_zmodul01 \\
& X0)))))))))) \Rightarrow (\forall X1.(m1\_zmodul01 X1 X0) \Rightarrow (k3\_zmodul01 X1 = \\
& k3\_zmodul01 X0))
\end{aligned}$$