

## t154\_zmodul01

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_numbers : \iota$  be given. Let  $k2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k12\_zmodul01 : \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Let  $k3\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $k3\_binom : \iota \Rightarrow \iota$  be given. Let  $k4\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  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  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k4\_xcmplx\_0 : \iota \Rightarrow \iota$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v1\_xxreal\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (\neg(\neg r1\_xxreal\_0 X0 X1) \wedge ((\neg v3\_xxreal\_0 X1) \wedge (\neg v2\_xxreal\_0 X0)))) \quad (1)$$

Assume the following.

$$\forall X0.(v1\_int\_1 X0) \Rightarrow ((r1\_xxreal\_0 k6\_numbers X0) \Rightarrow (X0 \in k5\_numbers)) \quad (2)$$

Assume the following.

$$\forall X0.(v1\_xcmplx\_0 X0) \Rightarrow (k3\_xcmplx\_0 X0 k6\_numbers = k6\_numbers) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(X0 \in X1) \Rightarrow (m1\_subset\_1 X0 X1) \quad (4)$$

Assume the following.

$$m1\_subset\_1 \ k1\_xboole\_0 \ k4\_ordinal1 \tag{5}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 \ X0) \wedge ((v13\_algstr\_0 \ X0) \wedge ((v3\_rlvect\_1 \\ X0) \wedge ((v4\_rlvect\_1 \ X0) \wedge (l2\_algstr\_0 \ X0)))))) \Rightarrow (\forall X1.(m2\_subset\_1 \\ X1 \ k1\_numbers \ k5\_numbers) \Rightarrow (k2\_binop\_1 \ k5\_numbers \ (u1\_struct\_0 \\ X0) \ (u1\_struct\_0 \ X0) \ (k3\_binom \ X0) \ X1 \ (k4\_struct\_0 \ X0) = k4\_struct\_0 \\ X0)) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 \ X0) \wedge ((v13\_algstr\_0 \ X0) \wedge ((v3\_rlvect\_1 \\ X0) \wedge ((v4\_rlvect\_1 \ X0) \wedge (l2\_algstr\_0 \ X0)))))) \Rightarrow (k4\_algstr\_0 \ X0 \\ (k4\_struct\_0 \ X0) = k4\_struct\_0 \ X0) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1.((\neg v1\_xboole\_0 \ X0) \wedge ((\neg v1\_xboole\_0 \ X1) \wedge \\ (m1\_subset\_1 \ X1 \ (k1\_zfmisc\_1 \ X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\ X2 \ X0 \ X1) \Leftrightarrow (m1\_subset\_1 \ X2 \ X1)) \end{aligned} \tag{8}$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \tag{9}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{10}$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\ ((\neg v1\_xboole\_0 \ X0) \wedge ((\neg v1\_xboole\_0 \ X1) \wedge (((v1\_funct\_1 \ X3) \wedge (( \\ v1\_funct\_2 \ X3 \ (k2\_zfmisc\_1 \ X0 \ X1) \ X2) \wedge (m1\_subset\_1 \ X3 \ (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 \ (k2\_zfmisc\_1 \ X0 \ X1) \ X2)))))) \wedge ((m1\_subset\_1 \ X4 \ X0) \wedge \\ (m1\_subset\_1 \ X5 \ X1)))))) \Rightarrow (k2\_binop\_1 \ X0 \ X1 \ X2 \ X3 \ X4 \ X5 = k1\_binop\_1 \\ X3 \ X4 \ X5) \end{aligned} \tag{11}$$

Assume the following.

$$(\neg v1\_xboole\_0 \ k4\_ordinal1) \wedge (v3\_ordinal1 \ k4\_ordinal1) \tag{12}$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 \ X0) \Rightarrow ((v1\_xcmplx\_0 \ (k4\_xcmplx\_0 \ X0)) \wedge \\ (v1\_xreal\_0 \ (k4\_xcmplx\_0 \ X0))) \tag{13}$$

Assume the following.

$$\forall X0.(v1\_int\_1 X0) \Rightarrow ((v1\_xcmplx\_0 (k4\_xcmplx\_0 X0)) \wedge (v1\_int\_1 (k4\_xcmplx\_0 X0))) \quad (14)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 (u1\_struct\_0 X0)) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v2\_xxreal\_0 X0) \wedge (v1\_xreal\_0 X0)) \wedge ((\neg v3\_xxreal\_0 X1) \wedge (v1\_xreal\_0 X1))) \Rightarrow (\neg v2\_xxreal\_0 (k3\_xcmplx\_0 X0 X1)) \quad (16)$$

Assume the following.

$$\forall X0.((\neg v3\_xxreal\_0 X0) \wedge (v1\_xreal\_0 X0)) \Rightarrow ((v1\_xcmplx\_0 (k4\_xcmplx\_0 X0)) \wedge (\neg v2\_xxreal\_0 (k4\_xcmplx\_0 X0))) \quad (17)$$

Assume the following.

$$\forall X0.((\neg v2\_xxreal\_0 X0) \wedge (v1\_xreal\_0 X0)) \Rightarrow ((v1\_xcmplx\_0 (k4\_xcmplx\_0 X0)) \wedge (\neg v3\_xxreal\_0 (k4\_xcmplx\_0 X0))) \quad (18)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (19)$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (20)$$

Assume the following.

$$m1\_subset\_1 k5\_numbers (k1\_zfmisc\_1 k1\_numbers) \quad (21)$$

Assume the following.

$$\forall X0.(l2\_struct\_0 X0) \Rightarrow (m1\_subset\_1 (k4\_struct\_0 X0) (u1\_struct\_0 X0)) \quad (22)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow ((v1\_funct\_1 (k3\_binom X0)) \wedge ((v1\_funct\_2 (k3\_binom X0) (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (k3\_binom X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \quad (23)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow ((v1\_funct\_1 \\ (k12\_zmodul01 X0)) \wedge ((v1\_funct\_2 (k12\_zmodul01 X0) (k2\_zfmisc\_1 \\ k4\_numbers (u1\_struct\_0 X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 \\ (k12\_zmodul01 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 k4\_numbers \\ (u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \end{aligned} \quad (24)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow (\forall X1. \\ ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 k4\_numbers (u1\_struct\_0 \\ X0)) (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ (k2\_zfmisc\_1 k4\_numbers (u1\_struct\_0 X0)) (u1\_struct\_0 X0)))))) \Rightarrow \\ ((X1 = k12\_zmodul01 X0) \Leftrightarrow (\forall X2.(m1\_subset\_1 X2 k4\_numbers) \Rightarrow \\ (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (((r1\_xxreal\_0 \\ k6\_numbers X2) \Rightarrow (k2\_binop\_1 k4\_numbers (u1\_struct\_0 X0) (u1\_struct\_0 \\ X0) X1 X2 X3 = k1\_binop\_1 (k3\_binom X0) X2 X3)) \wedge ((\neg r1\_xxreal\_0 k6\_numbers \\ X2) \Rightarrow (k2\_binop\_1 k4\_numbers (u1\_struct\_0 X0) (u1\_struct\_0 X0) \\ X1 X2 X3 = k1\_binop\_1 (k3\_binom X0) (k4\_xcmplx\_0 X2) (k4\_algstr\_0 \\ X0 X3)))))))))) \end{aligned} \quad (25)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \quad (26)$$

Assume the following.

$$\forall X0.((v1\_xxreal\_0 X0) \wedge (v3\_xxreal\_0 X0)) \Rightarrow ((\neg v1\_xboole\_0 \\ X0) \wedge ((v1\_xxreal\_0 X0) \wedge (\neg v2\_xxreal\_0 X0))) \quad (27)$$

Assume the following.

$$\forall X0.(v1\_xreal\_0 X0) \Rightarrow (v1\_xxreal\_0 X0) \quad (28)$$

Assume the following.

$$\forall X0.(v1\_int\_1 X0) \Rightarrow (v1\_xreal\_0 X0) \quad (29)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0) \Rightarrow (v1\_xreal\_0 X0) \quad (30)$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ X0)) \Rightarrow (v1\_xboole\_0 X1)) \quad (31)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_numbers) \Rightarrow (v1\_int\_1 X0) \quad (32)$$

**Theorem 1**

$$\forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l2\_algstr\_0 X0))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 k4\_numbers) \Rightarrow (k2\_binop\_1 k4\_numbers (u1\_struct\_0 X0) (u1\_struct\_0 X0) (k12\_zmodul01 X0) X1 (k4\_struct\_0 X0) = k4\_struct\_0 X0))$$