

t92_zmodul01 (TMFWFQnKFwXgDcuyUPQE- JsBcSeirSicxFQn)

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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 $r1_struct_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_zmodul01 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_rlvect_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $l2_algstr_0 : \iota \Rightarrow o$ be given. Let $l1_algstr_0 : \iota \Rightarrow o$ be given. Let $v1_zmodul01 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v2_zmodul01 X0) \wedge \\ & ((v3_zmodul01 X0) \wedge ((v4_zmodul01 X0) \wedge ((v5_zmodul01 X0) \wedge (l1_zmodul01 \\ & X0)))))))))) \Rightarrow (\forall X1. (m1_zmodul01 X1 X0) \Rightarrow ((\neg v2_struct_0 \\ & X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((v3_rlvect_1 X1) \wedge \\ & ((v4_rlvect_1 X1) \wedge ((v2_zmodul01 X1) \wedge ((v3_zmodul01 X1) \wedge ((v4_zmodul01 \\ & X1) \wedge ((v5_zmodul01 X1) \wedge (l1_zmodul01 X1))))))))))))) \end{aligned} \quad (1)$$

Assume the following.

$$\forall X0. (l2_struct_0 X0) \Rightarrow (l1_struct_0 X0) \quad (2)$$

Assume the following.

$$\forall X0. (l2_algstr_0 X0) \Rightarrow ((l2_struct_0 X0) \wedge (l1_algstr_0 X0)) \quad (3)$$

Assume the following.

$$\forall X0. (l1_zmodul01 X0) \Rightarrow (l2_algstr_0 X0) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2_struct_0 X0) \wedge (v13_algstr_0 \\ & X0) \wedge (v2_rlvect_1 X0) \wedge (v3_rlvect_1 X0) \wedge (v4_rlvect_1 X0) \wedge \\ & ((v2_zmodul01 X0) \wedge (v3_zmodul01 X0) \wedge (v4_zmodul01 X0) \wedge (v5_zmodul01 \\ & X0) \wedge (l1_zmodul01 X0)))))) \wedge ((m1_zmodul01 X1 X0) \wedge (m1_zmodul01 \\ & X2 X0)) \Rightarrow ((v1_zmodul01 (k6_zmodul01 X0 X1 X2)) \wedge (m1_zmodul01 (\\ & k6_zmodul01 X0 X1 X2) X0)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0. (l1_struct_0 X0) \Rightarrow (\forall X1. (r1_struct_0 X0 X1) \Leftrightarrow (X1 \in u1_struct_0 X0)) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge (v13_algstr_0 X0) \wedge (v2_rlvect_1 \\ & X0) \wedge (v3_rlvect_1 X0) \wedge (v4_rlvect_1 X0) \wedge (v2_zmodul01 X0) \wedge \\ & ((v3_zmodul01 X0) \wedge (v4_zmodul01 X0) \wedge (v5_zmodul01 X0) \wedge (l1_zmodul01 \\ & X0)))))) \Rightarrow (\forall X1. (m1_zmodul01 X1 X0) \Rightarrow (\forall X2. (m1_zmodul01 \\ & X2 X0) \Rightarrow (\forall X3. ((v1_zmodul01 X3) \wedge (m1_zmodul01 X3 X0)) \Rightarrow ((\\ & X3 = k6_zmodul01 X0 X1 X2) \Leftrightarrow (u1_struct_0 X3 = ReplSep2 (toset (\lambda X4 : \\ & \iota.m1_subset_1 X4 (u1_struct_0 X0))) (\lambda X4 : \iota.toset (\lambda X5 : \\ & \iota.m1_subset_1 X5 (u1_struct_0 X0))) (\lambda X4 : \iota.\lambda X5 : \iota. \\ & (r1_struct_0 X1 X4) \wedge (r1_struct_0 X2 X5)) (\lambda X4 : \iota.\lambda X5 : \\ & \iota.k3_rlvect_1 X0 X4 X5)))))) \end{aligned} \quad (7)$$

Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v2_struct_0 X1) \wedge (v13_algstr_0 X1) \wedge \\ & ((v2_rlvect_1 X1) \wedge (v3_rlvect_1 X1) \wedge (v4_rlvect_1 X1) \wedge (v2_zmodul01 \\ & X1) \wedge (v3_zmodul01 X1) \wedge (v4_zmodul01 X1) \wedge (v5_zmodul01 X1) \wedge \\ & (l1_zmodul01 X1)))))) \Rightarrow (\forall X2. (m1_zmodul01 X2 X1) \Rightarrow (\\ & \forall X3. (m1_zmodul01 X3 X1) \Rightarrow ((r1_struct_0 (k6_zmodul01 X1 \\ & X2 X3) X0) \Leftrightarrow (\exists X4. (m1_subset_1 X4 (u1_struct_0 X1)) \wedge (\exists X5. \\ & (m1_subset_1 X5 (u1_struct_0 X1)) \wedge (r1_struct_0 X2 X4) \wedge (r1_struct_0 \\ & X3 X5) \wedge (X0 = k3_rlvect_1 X1 X4 X5)))))) \end{aligned}$$