

t3_rusub_2

(TMVX4yZUxHa2oEfYSvnR8v3FQ65MySjr9NW)

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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 $v5_rlvect_1 : \iota \Rightarrow o$ be given. Let $v6_rlvect_1 : \iota \Rightarrow o$ be given. Let $v7_rlvect_1 : \iota \Rightarrow o$ be given. Let $v8_rlvect_1 : \iota \Rightarrow o$ be given. Let $v2_bhsp_1 : \iota \Rightarrow o$ be given. Let $l1_bhsp_1 : \iota \Rightarrow o$ be given. Let $m1_rusub_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_struct_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_rusub_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $l1_rlvect_1 : \iota \Rightarrow o$ be given. Let $v1_bhsp_1 : \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_xboole_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\ & X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v5_rlvect_1 X0) \wedge \\ & ((v6_rlvect_1 X0) \wedge ((v7_rlvect_1 X0) \wedge ((v8_rlvect_1 X0) \wedge ((v2_bhsp_1 \\ & X0) \wedge (l1_bhsp_1 X0)))))))))) \Rightarrow (\forall X1. (m1_rusub_1 X1 X0) \Rightarrow \\ & ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v2_rlvect_1 X1) \wedge ((\\ & v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge ((v5_rlvect_1 X1) \wedge ((v6_rlvect_1 \\ & X1) \wedge ((v7_rlvect_1 X1) \wedge ((v8_rlvect_1 X1) \wedge ((v2_bhsp_1 X1) \wedge (l1_bhsp_1 \\ & X1)))))))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. (l2_struct_0 X0) \Rightarrow (l1_struct_0 X0) \tag{2}$$

Assume the following.

$$\forall X0. (l2_algstr_0 X0) \Rightarrow ((l2_struct_0 X0) \wedge (l1_algstr_0 X0)) \tag{3}$$

Assume the following.

$$\forall X0. (l1_rlvect_1 X0) \Rightarrow (l2_algstr_0 X0) \tag{4}$$

Assume the following.

$$\forall X0. (l1_bhsp_1 X0) \Rightarrow (l1_rlvect_1 X0) \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 \\ & X0)\wedge((v2_rlvect_1 X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge \\ & ((v5_rlvect_1 X0)\wedge((v6_rlvect_1 X0)\wedge((v7_rlvect_1 X0)\wedge((v8_rlvect_1 \\ & X0)\wedge((v2_bhsp_1 X0)\wedge(l1_bhsp_1 X0))))))))))\wedge((m1_rusub_1 \\ & X1 X0)\wedge(m1_rusub_1 X2 X0))\Rightarrow((v1_bhsp_1 (k2_rusub_2 X0 X1 X2))\wedge \\ & (m1_rusub_1 (k2_rusub_2 X0 X1 X2) X0)) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.(l1_struct_0 X0)\Rightarrow(\forall X1.(r1_struct_0 X0 X1)\Leftrightarrow (X1 \in u1_struct_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(X2 = k3_xboole_0 X0 X1)\Leftrightarrow(\forall X3. (X3 \in X2)\Leftrightarrow((X3 \in X0)\wedge(X3 \in X1))) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge((v2_rlvect_1 \\ & X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v5_rlvect_1 X0)\wedge \\ & ((v6_rlvect_1 X0)\wedge((v7_rlvect_1 X0)\wedge((v8_rlvect_1 X0)\wedge((v2_bhsp_1 \\ & X0)\wedge(l1_bhsp_1 X0))))))))))\Rightarrow(\forall X1.(m1_rusub_1 X1 X0)\Rightarrow \\ & (\forall X2.(m1_rusub_1 X2 X0)\Rightarrow(\forall X3.((v1_bhsp_1 X3)\wedge(\\ & m1_rusub_1 X3 X0))\Rightarrow((X3 = k2_rusub_2 X0 X1 X2)\Leftrightarrow(u1_struct_0 X3 = \\ & k3_xboole_0 (u1_struct_0 X1) (u1_struct_0 X2)))))) \end{aligned} \quad (9)$$

Theorem 1

$$\begin{aligned} & \forall X0.(((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge((v2_rlvect_1 \\ & X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v5_rlvect_1 X0)\wedge \\ & ((v6_rlvect_1 X0)\wedge((v7_rlvect_1 X0)\wedge((v8_rlvect_1 X0)\wedge((v2_bhsp_1 \\ & X0)\wedge(l1_bhsp_1 X0))))))))))\Rightarrow(\forall X1.(m1_rusub_1 X1 X0)\Rightarrow \\ & (\forall X2.(m1_rusub_1 X2 X0)\Rightarrow(\forall X3.(r1_struct_0 (k2_rusub_2 \\ & X0 X1 X2) X3)\Leftrightarrow((r1_struct_0 X1 X3)\wedge(r1_struct_0 X2 X3)))))) \end{aligned}$$