

t31_grcat_1 (TMKJfuqRogH- sTTe3JYPqipK6rLFJjMePWDx)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v3_grcat_1 : \iota \Rightarrow o$ be given. Let $m3_grcat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k18_grcat_1 : \iota \Rightarrow \iota$ be given. Let $k19_grcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k20_grcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v8_algstr_0 : \iota \Rightarrow o$ be given. Let $m2_grcat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1_grcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_grcat_1 : \iota \Rightarrow o$ be given. Let $l1_grcat_1 : \iota \Rightarrow o$ be given. 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 $v4_grcat_1 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k8_grcat_1 : \iota \Rightarrow \iota$ be given. Let $k7_grcat_1 : \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} \forall X0.((v2_grcat_1 X0) \wedge (l1_grcat_1 X0)) \Rightarrow (\exists X1.((\\ \neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v3_rlvect_1 X1) \wedge ((v4_rlvect_1 \\ X1) \wedge (l2_algstr_0 X1)))))) \wedge (\exists X2.((\neg v2_struct_0 X2) \wedge ((\\ v13_algstr_0 X2) \wedge ((v3_rlvect_1 X2) \wedge ((v4_rlvect_1 X2) \wedge (l2_algstr_0 \\ X2)))))) \wedge (m1_grcat_1 X0 X1 X2))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_grcat_1 X0)) \Rightarrow (\forall X1. \\ (m3_grcat_1 X1 X0) \Leftrightarrow (m1_subset_1 X1 X0)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \wedge \\ (m1_subset_1 X1 (k18_grcat_1 X0))) \Rightarrow (k20_grcat_1 X0 X1 = k8_grcat_1 \\ X1) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \wedge \\ (m1_subset_1 X1 (k18_grcat_1 X0))) \Rightarrow (k19_grcat_1 X0 X1 = k7_grcat_1 \\ X1) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v4_grcat_1 X0)) \Rightarrow (\forall X1. (m3_grcat_1 X1 X0) \Rightarrow ((v2_grcat_1 X1) \wedge (l1_grcat_1 X1))) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge (l2_algstr_0 X0)))))) \wedge ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge (l2_algstr_0 X1)))))) \Rightarrow (\forall X2. (m1_grcat_1 X2 X0 X1) \Rightarrow ((v2_grcat_1 X2) \wedge (l1_grcat_1 X2))) \quad (6)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \wedge (m1_subset_1 X1 (k18_grcat_1 X0))) \Rightarrow ((v8_algstr_0 (k20_grcat_1 X0 X1)) \wedge (m2_grcat_1 (k20_grcat_1 X0 X1) X0)) \quad (7)$$

Assume the following.

$$\forall X0. \forall X1. (((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \wedge (m1_subset_1 X1 (k18_grcat_1 X0))) \Rightarrow ((v8_algstr_0 (k19_grcat_1 X0 X1)) \wedge (m2_grcat_1 (k19_grcat_1 X0 X1) X0)) \quad (8)$$

Assume the following.

$$\forall X0. ((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \Rightarrow ((\neg v1_xboole_0 (k18_grcat_1 X0)) \wedge (v4_grcat_1 (k18_grcat_1 X0))) \quad (9)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge (l2_algstr_0 X0)))))) \Rightarrow (\forall X1. ((\neg v2_struct_0 X1) \wedge ((v13_algstr_0 X1) \wedge ((v3_rlvect_1 X1) \wedge ((v4_rlvect_1 X1) \wedge (l2_algstr_0 X1)))))) \Rightarrow (\forall X2. ((v2_grcat_1 X2) \wedge (l1_grcat_1 X2)) \Rightarrow ((m1_grcat_1 X2 X0 X1) \Leftrightarrow ((k7_grcat_1 X2 = X0) \wedge (k8_grcat_1 X2 = X1)))) \quad (10)$$

Theorem 1

$$\forall X0. ((\neg v1_xboole_0 X0) \wedge (v3_grcat_1 X0)) \Rightarrow (\forall X1. (m3_grcat_1 X1 (k18_grcat_1 X0)) \Rightarrow (\forall X2. (m3_grcat_1 X2 (k18_grcat_1 X0)) \Rightarrow (\neg (k19_grcat_1 X0 X1 = k20_grcat_1 X0 X2)) \wedge (\forall X3. ((v8_algstr_0 X3) \wedge (m2_grcat_1 X3 X0)) \Rightarrow (\forall X4. ((v8_algstr_0 X4) \wedge (m2_grcat_1 X4 X0)) \Rightarrow (\forall X5. ((v8_algstr_0 X5) \wedge (m2_grcat_1 X5 X0)) \Rightarrow (\neg (m1_grcat_1 X1 X4 X5) \wedge (m1_grcat_1 X2 X3 X4)))))))) \quad (11)$$