

t12_orders_3 (TMKwSPY- HUqn3M2dadA7voHCfyVRPZBtJesB)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v4_orders_3 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k4_orders_3 : \iota \Rightarrow \iota$ be given. Let $m1_orders_3 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $v3_orders_2 : \iota \Rightarrow o$ be given. Let $v4_orders_2 : \iota \Rightarrow o$ be given. Let $v5_orders_2 : \iota \Rightarrow o$ be given. Let $l1_orders_2 : \iota \Rightarrow o$ be given. Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $v6_altcat_1 : \iota \Rightarrow o$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_altcat_1 : \iota \Rightarrow \iota$ be given. Let $k1_orders_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_multop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u2_altcat_1 : \iota \Rightarrow \iota$ be given. Let $k6_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v5_orders_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. (\neg v1_xboole_0 X1) \Rightarrow (k9_funct_2 X0 X1 = k1_funct_2 X0 X1) \quad (1)$$

Assume the following.

$$\forall X0. ((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\neg v1_xboole_0 (u1_struct_0 X0)) \quad (2)$$

Assume the following.

$$\forall X0. ((\neg v1_xboole_0 X0) \wedge (v4_orders_3 X0)) \Rightarrow (\forall X1. (m1_orders_3 X1 X0) \Rightarrow ((\neg v2_struct_0 X1) \wedge ((v3_orders_2 X1) \wedge ((v4_orders_2 X1) \wedge ((v5_orders_2 X1) \wedge (l1_orders_2 X1)))))) \quad (3)$$

Assume the following.

$$\forall X0. (l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \quad (4)$$

Assume the following.

$$\forall X0. (l1_orders_2 X0) \Rightarrow (l1_struct_0 X0) \quad (5)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v4_orders_3 X0)) \Rightarrow ((v6_altcat_1 (k4_orders_3 X0)) \wedge (l2_altcat_1 (k4_orders_3 X0))) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_orders_3 X0)) \Rightarrow (\forall X1. \\ & ((v6_altcat_1 X1) \wedge (l2_altcat_1 X1)) \Rightarrow ((X1 = k4_orders_3 X0) \Leftrightarrow (\\ & (u1_struct_0 X1 = X0) \wedge (\forall X2.(m1_orders_3 X2 X0) \Rightarrow (\forall X3. \\ & (m1_orders_3 X3 X0) \Rightarrow ((k1_binop_1 (u1_altcat_1 X1) X2 X3 = k1_orders_3 \\ & X2 X3) \wedge (\forall X4.(m1_orders_3 X4 X0) \Rightarrow (\forall X5.(m1_orders_3 \\ & X5 X0) \Rightarrow (\forall X6.(m1_orders_3 X6 X0) \Rightarrow (k1_multop_1 (u2_altcat_1 \\ & X1) X4 X5 X6 = k6_altcat_1 (k1_orders_3 X4 X5) (k1_orders_3 X5 X6)))))))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_orders_2 X0) \Rightarrow (\forall X1.(l1_orders_2 X1) \Rightarrow (\forall X2. \\ & (X2 = k1_orders_3 X0 X1) \Leftrightarrow (\forall X3.(X3 \in X2) \Leftrightarrow (\exists X4.((v1_funct_1 \\ & X4) \wedge ((v1_funct_2 X4 (u1_struct_0 X0) (u1_struct_0 X1)) \wedge (m1_subset_1 \\ & X4 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X1)))))) \wedge \\ & ((X3 = X4) \wedge ((X4 \in k1_funct_2 (u1_struct_0 X0) (u1_struct_0 X1)) \wedge \\ & (v5_orders_3 X4 X0 X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0. \forall X1. (r1_tarski X0 X1) \Leftrightarrow (\forall X2. (X2 \in X0) \Rightarrow (X2 \in X1)) \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_altcat_1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (u1_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 X0)) \Rightarrow (k1_altcat_1 \\ & X0 X1 X2 = k1_binop_1 (u1_altcat_1 X0) X1 X2))) \end{aligned} \quad (10)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_orders_3 X0)) \Rightarrow (\forall X1. \\ & (m1_subset_1 X1 (u1_struct_0 (k4_orders_3 X0))) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u1_struct_0 (k4_orders_3 X0))) \Rightarrow (\forall X3. \\ & (m1_orders_3 X3 X0) \Rightarrow (\forall X4.(m1_orders_3 X4 X0) \Rightarrow (((X1 = X3) \wedge \\ & (X2 = X4)) \Rightarrow (r1_tarski (k1_altcat_1 (k4_orders_3 X0) X1 X2) (k9_funct_2 \\ & (u1_struct_0 X3) (u1_struct_0 X4)))))) \end{aligned}$$