

t24_ringcat1

(TMU3pws7ACpgHWTApuQy5F2vANU4kgz3vdm)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $v1_classes2 : \iota \Rightarrow o$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u4_struct_0 : \iota \Rightarrow \iota$ be given. Let $k17_ringcat1 : \iota \Rightarrow \iota$ be given. Let $m3_ringcat1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10_ringcat1 : \iota \Rightarrow \iota$ be given. Let $k9_ringcat1 : \iota \Rightarrow \iota$ be given. Let $k3_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_graph_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k11_ringcat1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k12_ringcat1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_tarski : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k16_ringcat1 : \iota \Rightarrow \iota$ be given. Let $k1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_ringcat1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k9_xtuple_0 : \iota \Rightarrow \iota$ 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 $g1_cat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v11_struct_0 : \iota \Rightarrow o$ be given. Let $v1_cat_1 : \iota \Rightarrow o$ be given. Let $v4_ringcat1 : \iota \Rightarrow o$ be given. Let $l1_cat_1 : \iota \Rightarrow o$ be given. Let $l1_graph_1 : \iota \Rightarrow o$ be given. Let $k15_ringcat1 : \iota \Rightarrow \iota$ be given. Let $k14_ringcat1 : \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $u2_graph_1 : \iota \Rightarrow \iota$ be given. Let $u1_graph_1 : \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_cat_1 : \iota \Rightarrow \iota$ be given. Let $v5_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0. \forall X1. ((v1_relat_1 X1) \wedge (v4_relat_1 X1 X0)) \Rightarrow (k1_relset_1 X0 X1 = k9_xtuple_0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X1 X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))))) \wedge (((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X1 X0) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))))) \wedge ((v1_funct_1 X4) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X1 X1) X1)))))) \Rightarrow (\forall X5. \\ & \quad \forall X6. \forall X7. \forall X8. \forall X9. (g1_cat_1 X0 X1 X2 X3 X4 = g1_cat_1 X5 X6 X7 X8 X9) \Rightarrow ((X0 = X5) \wedge ((X1 = X6) \wedge ((X2 = X7) \wedge ((X3 = X8) \wedge (X4 = X9)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow ((\neg v2_struct_0 (k17_ringcat1 X0)) \wedge ((\neg v11_struct_0 (k17_ringcat1 X0)) \wedge (v1_cat_1 (k17_ringcat1 X0)))) \quad (3)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (v4_ringcat1 (k9_ringcat1 X0)) \quad (4)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (\neg v1_xboole_0 (k9_ringcat1 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(l1_cat_1 X0) \Rightarrow (l1_graph_1 X0) \quad (6)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (l1_cat_1 (k17_ringcat1 X0)) \quad (7)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow ((v1_funct_1 (k16_ringcat1 X0)) \wedge (m1_subset_1 (k16_ringcat1 X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k10_ringcat1 X0) (k10_ringcat1 X0)) (k10_ringcat1 X0)))))) \quad (8)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow ((v1_funct_1 (k15_ringcat1 X0)) \wedge ((v1_funct_2 (k15_ringcat1 X0) (k10_ringcat1 X0) X0) \wedge (m1_subset_1 (k15_ringcat1 X0) (k1_zfmisc_1 (k2_zfmisc_1 (k10_ringcat1 X0) X0)))))) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow ((v1_funct_1 (k14_ringcat1 X0)) \wedge ((v1_funct_2 (k14_ringcat1 X0) (k10_ringcat1 X0) X0) \wedge (m1_subset_1 (k14_ringcat1 X0) (k1_zfmisc_1 (k2_zfmisc_1 (k10_ringcat1 X0) X0)))))) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_graph_1 X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (k4_graph_1 X0 X1 = k3_funct_2 (u4_struct_0 X0) (u1_struct_0 X0) (u2_graph_1 X0) X1)) \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0) \wedge ((\neg v11_struct_0 X0) \wedge (l1_graph_1 \\ & X0))) \Rightarrow (\forall X1.(m1_subset_1 X1 (u4_struct_0 X0)) \Rightarrow (k3_graph_1 \\ & X0 X1 = k3_funct_2 (u4_struct_0 X0) (u1_struct_0 X0) (u1_graph_1 \\ & X0) X1)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (k17_ringcat1 \\ & X0 = g1_cat_1 (k9_ringcat1 X0) (k10_ringcat1 (k9_ringcat1 X0)) \\ & (k14_ringcat1 (k9_ringcat1 X0)) (k15_ringcat1 (k9_ringcat1 X0)) \\ & (k16_ringcat1 (k9_ringcat1 X0))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow (\forall X1. \\ & ((v1_funct_1 X1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (\\ & k2_zfmisc_1 (k10_ringcat1 X0) (k10_ringcat1 X0)) (k10_ringcat1 \\ & X0)))))) \Rightarrow ((X1 = k16_ringcat1 X0) \Leftrightarrow ((\forall X2.(m3_ringcat1 X2 \\ & (k10_ringcat1 X0)) \Rightarrow (\forall X3.(m3_ringcat1 X3 (k10_ringcat1 \\ & X0)) \Rightarrow ((k4_tarski X2 X3 \in k1_relset_1 (k2_zfmisc_1 (k10_ringcat1 \\ & X0) (k10_ringcat1 X0)) X1) \Leftrightarrow (k11_ringcat1 X0 X2 = k12_ringcat1 X0 \\ & X3)))))) \wedge (\forall X2.(m3_ringcat1 X2 (k10_ringcat1 X0)) \Rightarrow (\forall X3. \\ & (m3_ringcat1 X3 (k10_ringcat1 X0)) \Rightarrow ((k4_tarski X2 X3 \in k1_relset_1 \\ & (k2_zfmisc_1 (k10_ringcat1 X0) (k10_ringcat1 X0)) X1) \Rightarrow (k1_binop_1 \\ & X1 X2 X3 = k6_ringcat1 X2 X3))))))))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow (\forall X1. \\ & ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k10_ringcat1 X0) X0) \wedge (m1_subset_1 \\ & X1 (k1_zfmisc_1 (k2_zfmisc_1 (k10_ringcat1 X0) X0)))))) \Rightarrow ((X1 = \\ & k15_ringcat1 X0) \Leftrightarrow (\forall X2.(m3_ringcat1 X2 (k10_ringcat1 X0)) \Rightarrow \\ & (k3_funct_2 (k10_ringcat1 X0) X0 X1 X2 = k12_ringcat1 X0 X2)))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v4_ringcat1 X0)) \Rightarrow (\forall X1. \\ & ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k10_ringcat1 X0) X0) \wedge (m1_subset_1 \\ & X1 (k1_zfmisc_1 (k2_zfmisc_1 (k10_ringcat1 X0) X0)))))) \Rightarrow ((X1 = \\ & k14_ringcat1 X0) \Leftrightarrow (\forall X2.(m3_ringcat1 X2 (k10_ringcat1 X0)) \Rightarrow \\ & (k3_funct_2 (k10_ringcat1 X0) X0 X1 X2 = k11_ringcat1 X0 X2)))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_cat_1 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (u4_struct_0 \\ & X0)) \Rightarrow (\forall X2.(m1_subset_1 X2 (u4_struct_0 X0)) \Rightarrow ((k4_tarski \\ & X2 X1 \in k9_xtuple_0 (u1_cat_1 X0)) \Rightarrow (k1_cat_1 X0 X1 X2 = k1_binop_1 \\ & (u1_cat_1 X0) X2 X1)))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))) \Rightarrow ((v4_relat_1 X2 X0) \wedge (v5_relat_1 X2 X1)) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))) \Rightarrow (v1_relat_1 X2) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l1_cat_1 X0) \Rightarrow ((v1_cat_1 X0) \Rightarrow (X0 = g1_cat_1 (u1_struct_0 \\ & X0) (u4_struct_0 X0) (u1_graph_1 X0) (u2_graph_1 X0) (u1_cat_1 \\ & X0))) \end{aligned} \quad (20)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v1_xboole_0 X0) \wedge (v1_classes2 X0)) \Rightarrow (\forall X1. \\ & (m1_subset_1 X1 (u4_struct_0 (k17_ringcat1 X0))) \Rightarrow (\forall X2. \\ & (m1_subset_1 X2 (u4_struct_0 (k17_ringcat1 X0))) \Rightarrow (\forall X3. \\ & (m3_ringcat1 X3 (k10_ringcat1 (k9_ringcat1 X0))) \Rightarrow (\forall X4. \\ & (m3_ringcat1 X4 (k10_ringcat1 (k9_ringcat1 X0))) \Rightarrow (((X1 = X3) \wedge \\ & (X2 = X4)) \Rightarrow (((k3_graph_1 (k17_ringcat1 X0) X2 = k4_graph_1 (k17_ringcat1 \\ & X0) X1) \Rightarrow (k11_ringcat1 (k9_ringcat1 X0) X4 = k12_ringcat1 (k9_ringcat1 \\ & X0) X3)) \wedge (((k11_ringcat1 (k9_ringcat1 X0) X4 = k12_ringcat1 (k9_ringcat1 \\ & X0) X3) \Rightarrow (k3_graph_1 (k17_ringcat1 X0) X2 = k4_graph_1 (k17_ringcat1 \\ & X0) X1)) \wedge (((k3_graph_1 (k17_ringcat1 X0) X2 = k4_graph_1 (k17_ringcat1 \\ & X0) X1) \Rightarrow (k4_tarski X4 X3 \in k1_relset_1 (k2_zfmisc_1 (k10_ringcat1 \\ & (k9_ringcat1 X0)) (k10_ringcat1 (k9_ringcat1 X0))) (k16_ringcat1 \\ & (k9_ringcat1 X0)))) \wedge (((k4_tarski X4 X3 \in k1_relset_1 (k2_zfmisc_1 \\ & (k10_ringcat1 (k9_ringcat1 X0)) (k10_ringcat1 (k9_ringcat1 X0))) \\ & (k16_ringcat1 (k9_ringcat1 X0))) \Rightarrow (k3_graph_1 (k17_ringcat1 \\ & X0) X2 = k4_graph_1 (k17_ringcat1 X0) X1)) \wedge (((k3_graph_1 (k17_ringcat1 \\ & X0) X2 = k4_graph_1 (k17_ringcat1 X0) X1) \Rightarrow (k1_cat_1 (k17_ringcat1 \\ & X0) X1 X2 = k6_ringcat1 X4 X3)) \wedge (((k3_graph_1 (k17_ringcat1 X0) \\ & X1 = k3_graph_1 (k17_ringcat1 X0) X2) \Rightarrow (k11_ringcat1 (k9_ringcat1 \\ & X0) X3 = k11_ringcat1 (k9_ringcat1 X0) X4)) \wedge (((k11_ringcat1 (k9_ringcat1 \\ & X0) X3 = k11_ringcat1 (k9_ringcat1 X0) X4) \Rightarrow (k3_graph_1 (k17_ringcat1 \\ & X0) X1 = k3_graph_1 (k17_ringcat1 X0) X2)) \wedge (((k4_graph_1 (k17_ringcat1 \\ & X0) X1 = k4_graph_1 (k17_ringcat1 X0) X2) \Rightarrow (k12_ringcat1 (k9_ringcat1 \\ & X0) X3 = k12_ringcat1 (k9_ringcat1 X0) X4)) \wedge (((k12_ringcat1 (k9_ringcat1 \\ & X0) X3 = k12_ringcat1 (k9_ringcat1 X0) X4) \Rightarrow (k4_graph_1 (k17_ringcat1 \\ & X0) X1 = k4_graph_1 (k17_ringcat1 X0) X2)))))))))))))) \end{aligned}$$