

t21_altcat_2

(TMVqraom8JyjWPY3xFX2wuA4aWHWGCZT8sK)

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Let $l2_altcat_1 : \iota \Rightarrow o$ be given. Let $m1_altcat_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_relat_1 : \iota \Rightarrow o$ be given. Let $v4_relat_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_partfun1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r2_altcat_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m2_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u2_altcat_1 : \iota \Rightarrow \iota$ be given. Let $k3_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $k3_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $u1_altcat_1 : \iota \Rightarrow \iota$ be given. Let $k2_altcat_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_altcat_1 : \iota \Rightarrow o$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v1_relat_1 X3) \wedge \\ & ((v4_relat_1 X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0)))) \Rightarrow \\ & (\forall X4. ((v1_relat_1 X4) \wedge ((v4_relat_1 X4 X1) \wedge ((v1_funct_1 \\ & X4) \wedge (v1_partfun1 X4 X1)))) \Rightarrow (\forall X5. ((v1_relat_1 X5) \wedge ((v4_relat_1 \\ & X5 X2) \wedge ((v1_funct_1 X5) \wedge (v1_partfun1 X5 X2)))) \Rightarrow (((r2_altcat_2 \\ & X0 X1 X3 X4) \wedge (r2_altcat_2 X1 X2 X4 X5)) \Rightarrow (r2_altcat_2 X0 X2 X3 X5))) \end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((r1_tarski X0 X1) \wedge (r1_tarski X1 X2)) \Rightarrow (r1_tarski X0 X2) \tag{2}$$

Assume the following.

$$\begin{aligned} & \forall X0. (l2_altcat_1 X0) \Rightarrow (m2_pboole (u2_altcat_1 X0) (k3_zfmisc_1 \\ & (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 X0)) (k3_altcat_1 \\ & (u1_struct_0 X0) (u1_altcat_1 X0) (u1_altcat_1 X0)) (k2_altcat_1 \\ & (u1_struct_0 X0) (u1_altcat_1 X0))) \end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned} & \forall X0. (l1_altcat_1 X0) \Rightarrow ((v1_relat_1 (u1_altcat_1 X0)) \wedge \\ & ((v4_relat_1 (u1_altcat_1 X0) (k2_zfmisc_1 (u1_struct_0 X0) (\\ & u1_struct_0 X0)))) \wedge ((v1_funct_1 (u1_altcat_1 X0)) \wedge (v1_partfun1 \\ & (u1_altcat_1 X0) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)))))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 X0) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 X0)))) \wedge ((v1_relat_1 \\ & X2) \wedge ((v4_relat_1 X2 X0) \wedge ((v1_funct_1 X2) \wedge (v1_partfun1 X2 X0)))))) \Rightarrow \\ & (\forall X3. (m2_pboole X3 X0 X1 X2) \Rightarrow ((v1_relat_1 X3) \wedge ((v4_relat_1 \\ & X3 X0) \wedge ((v1_funct_1 X3) \wedge (v1_partfun1 X3 X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0. (l2_altcat_1 X0) \Rightarrow (l1_altcat_1 X0) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1_relat_1 X1) \wedge ((v4_relat_1 \\ & X1 (k2_zfmisc_1 X0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (k2_zfmisc_1 \\ & X0 X0)))))) \wedge ((v1_relat_1 X2) \wedge ((v4_relat_1 X2 (k2_zfmisc_1 X0 X0)) \wedge \\ & ((v1_funct_1 X2) \wedge (v1_partfun1 X2 (k2_zfmisc_1 X0 X0)))))) \Rightarrow ((\\ & v1_relat_1 (k3_altcat_1 X0 X1 X2)) \wedge ((v4_relat_1 (k3_altcat_1 \\ & X0 X1 X2) (k3_zfmisc_1 X0 X0 X0)) \wedge ((v1_funct_1 (k3_altcat_1 X0 X1 \\ & X2)) \wedge (v1_partfun1 (k3_altcat_1 X0 X1 X2) (k3_zfmisc_1 X0 X0 X0)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_relat_1 X1) \wedge ((v4_relat_1 X1 (k2_zfmisc_1 \\ & X0 X0)) \wedge ((v1_funct_1 X1) \wedge (v1_partfun1 X1 (k2_zfmisc_1 X0 X0)))))) \Rightarrow \\ & ((v1_relat_1 (k2_altcat_1 X0 X1)) \wedge ((v4_relat_1 (k2_altcat_1 \\ & X0 X1) (k3_zfmisc_1 X0 X0 X0)) \wedge ((v1_funct_1 (k2_altcat_1 X0 X1)) \wedge \\ & (v1_partfun1 (k2_altcat_1 X0 X1) (k3_zfmisc_1 X0 X0 X0)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. (l2_altcat_1 X0) \Rightarrow (\forall X1. (l2_altcat_1 X1) \Rightarrow ((\\ & m1_altcat_2 X1 X0) \Leftrightarrow ((r1_tarski (u1_struct_0 X1) (u1_struct_0 \\ & X0)) \wedge ((r2_altcat_2 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 \\ & X1)) (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_altcat_1 \\ & X1) (u1_altcat_1 X0)) \wedge (r2_altcat_2 (k3_zfmisc_1 (u1_struct_0 \\ & X1) (u1_struct_0 X1) (u1_struct_0 X1)) (k3_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0) (u1_struct_0 X0)) (u2_altcat_1 X1) (u2_altcat_1 \\ & X0)))))) \end{aligned} \quad (9)$$

Theorem 1

$$\begin{aligned} & \forall X0. (l2_altcat_1 X0) \Rightarrow (\forall X1. (l2_altcat_1 X1) \Rightarrow (\forall X2. \\ & (l2_altcat_1 X2) \Rightarrow (((m1_altcat_2 X0 X1) \wedge (m1_altcat_2 X1 X2)) \Rightarrow \\ & (m1_altcat_2 X0 X2)))) \end{aligned}$$