

## t7\_altcat\_2

(TMTGUy8coC9dXxSmpHs2KSseCwETh99this)

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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  $r2\_altcat\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\ & (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & ((\forall X3. (X3 \in X0) \Rightarrow (k1\_funct\_1 X1 X3 = k1\_funct\_1 X2 X3)) \Rightarrow (X1 = \\ & X2))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\ & X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow (\forall X3. ( \\ & (v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 X1) \wedge ((v1\_funct\_1 X3) \wedge (v1\_partfun1 \\ & X3 X1)))) \Rightarrow ((r2\_altcat\_2 X0 X1 X2 X3) \Leftrightarrow ((r1\_tarski X0 X1) \wedge (\forall X4. \\ & (X4 \in X0) \Rightarrow (r1\_tarski (k1\_funct\_1 X2 X4) (k1\_funct\_1 X3 X4)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (X0 = X1) \Leftrightarrow ((r1\_tarski X0 X1) \wedge (r1\_tarski X1 X0)) \tag{3}$$

### Theorem 1

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\ & X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow (\forall X3. ( \\ & (v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 X1) \wedge ((v1\_funct\_1 X3) \wedge (v1\_partfun1 \\ & X3 X1)))) \Rightarrow (((r2\_altcat\_2 X0 X1 X2 X3) \wedge (r2\_altcat\_2 X1 X0 X3 X2)) \Rightarrow \\ & (X2 = X3))) \end{aligned}$$