

# t8\_altcat\_2 (TMWNQR- jWiNKmV9JQrFN7f4naZqigqDzjAzn)

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

$$\forall X0. \forall X1. (r1\_tarski X0 X1) \Leftrightarrow (\forall X2. (X2 \in X0) \Rightarrow (X2 \in X1)) \quad (1)$$

Assume the following.

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

**Theorem 1**

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v1\_relat\_1 X3) \wedge \\ & ((v4\_relat\_1 X3 X0) \wedge ((v1\_funct\_1 X3) \wedge (v1\_partfun1 X3 X0)))) \Rightarrow \\ & (\forall X4. ((v1\_relat\_1 X4) \wedge ((v4\_relat\_1 X4 X1) \wedge ((v1\_funct\_1 \\ & X4) \wedge (v1\_partfun1 X4 X1)))) \Rightarrow (\forall X5. ((v1\_relat\_1 X5) \wedge ((v4\_relat\_1 \\ & X5 X2) \wedge ((v1\_funct\_1 X5) \wedge (v1\_partfun1 X5 X2)))) \Rightarrow (((r2\_altcat\_2 \\ & X0 X1 X3 X4) \wedge (r2\_altcat\_2 X1 X2 X4 X5)) \Rightarrow (r2\_altcat\_2 X0 X2 X3 X5)))) \end{aligned}$$