

t83\_card\_2  
(TMbokmrjBHJU2mem3LoCtiatsBMax1nj87y)

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Let  $v1\_card\_1 : \iota \Rightarrow o$  be given. Let  $r1\_ordinal1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_card\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k10\_ordinal2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_card\_1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_card\_1 X0) \Rightarrow (\forall X1.(v1\_card\_1 X1) \Rightarrow ((X0 \in X1) \Leftrightarrow ((r1\_ordinal1 X0 X1) \wedge (X0 \neq X1)))) \quad (1)$$

Assume the following.

$$\begin{aligned} &\forall X0.(v3\_ordinal1 X0) \Rightarrow (\forall X1.(v3\_ordinal1 X1) \Rightarrow (\forall X2. \\ &(v3\_ordinal1 X2) \Rightarrow (\forall X3.(v3\_ordinal1 X3) \Rightarrow (((r1\_ordinal1 \\ &X0 X1) \wedge (r1\_ordinal1 X2 X3)) \Rightarrow (r1\_ordinal1 (k10\_ordinal2 X0 X2) \\ &(k10\_ordinal2 X1 X3)))))) \quad (2) \end{aligned}$$

Assume the following.

$$\forall X0.\forall X1.(r1\_tarski X0 X1) \Rightarrow (r1\_ordinal1 (k1\_card\_1 X0) (k1\_card\_1 X1)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.((v3\_ordinal1 X0) \wedge (v3\_ordinal1 X1)) \Rightarrow ((r1\_ordinal1 X0 X1) \Leftrightarrow (r1\_tarski X0 X1)) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((v3\_ordinal1 X0) \wedge (v3\_ordinal1 X1)) \Rightarrow (v3\_ordinal1 (k10\_ordinal2 X0 X1)) \quad (5)$$

Assume the following.

$$\forall X0.(v1\_card\_1 X0) \Rightarrow (\forall X1.(v1\_card\_1 X1) \Rightarrow (k1\_card\_2 X0 X1 = k1\_card\_1 (k10\_ordinal2 X0 X1))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_card\_1 X0)\wedge(v1\_card\_1 X1))\Rightarrow(k1\_card\_2 X0 X1 = k1\_card\_2 X1 X0) \quad (7)$$

Assume the following.

$$\forall X0.(v1\_card\_1 X0)\Rightarrow(v3\_ordinal1 X0) \quad (8)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(v1\_card\_1 X0)\Rightarrow(\forall X1.(v1\_card\_1 X1)\Rightarrow(\forall X2. \\ & (v1\_card\_1 X2)\Rightarrow(\forall X3.(v1\_card\_1 X3)\Rightarrow((\neg(\neg(X0 \in X1)\wedge(X2 \in \\ & X3))\wedge(\neg(r1\_ordinal1 X0 X1)\wedge(X2 \in X3))\wedge(\neg(X0 \in X1)\wedge(r1\_ordinal1 \\ & X2 X3))\wedge(\neg(r1\_ordinal1 X0 X1)\wedge(r1\_ordinal1 X2 X3))))))\Rightarrow((r1\_ordinal1 \\ & (k1\_card\_2 X0 X2) (k1\_card\_2 X1 X3))\wedge(r1\_ordinal1 (k1\_card\_2 X2 \\ & X0) (k1\_card\_2 X1 X3)))))) \end{aligned}$$