

## t63\_card\_3

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $r1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_card\_3 : \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_tarski : \iota \Rightarrow \iota$  be given. Let  $k2\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. k3\_tarski (k2\_tarski X0 X1) = k2\_xboole\_0 X0 X1 \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. (( \\ & r1\_tarski X1 (k8\_card\_3 X0)) \wedge (\forall X2. ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 \\ & X2)) \Rightarrow (\forall X3. ((v1\_relat\_1 X3) \wedge (v1\_funct\_1 X3)) \Rightarrow (((X2 \in X1) \wedge \\ & (X3 \in X1)) \Rightarrow (r1\_partfun1 X2 X3)))))) \Rightarrow (k3\_tarski X1 \in k8\_card\_3 X0)) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (r1\_tarski (k2\_tarski X0 X1) X2) \Leftrightarrow ((X0 \in X2) \wedge (X1 \in X2)) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \wedge (( \\ & v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \Rightarrow ((r1\_partfun1 X0 X1) \Rightarrow (r1\_partfun1 \\ & X1 X0)) \end{aligned} \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. (((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \wedge ((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \Rightarrow (r1\_partfun1 X0 X0) \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. (X2 = k2\_tarski X0 X1) \Leftrightarrow (\forall X3. (X3 \in X2) \Leftrightarrow ((X3 = X0) \vee (X3 = X1))) \quad (6)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.(( \\ & \quad v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge \\ & (v1\_funct\_1 X2)) \Rightarrow (((r1\_partfun1 X0 X1) \wedge ((X0 \in k8\_card\_3 X2) \wedge \\ & \quad X1 \in k8\_card\_3 X2))) \Rightarrow (k2\_xboole\_0 X0 X1 \in k8\_card\_3 X2)))) \end{aligned}$$