

# t10\_pencil\_1

(TMF5EAdqMjYLmnnkKtBXWjKD9agyLsmYvFk)

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Let  $v1\_xboole\_0 : \iota \Rightarrow o$  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  $v16\_pencil\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_funct\_7 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_pzfmisc1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_card\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_tarski : \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \neg(X0 \in X1) \wedge (v1\_xboole\_0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1. \forall X2. \\ & \forall X3. (X2 \neq X3) \Rightarrow (k1\_funct\_1 (k2\_funct\_7 X0 X2 X1) X3 = k1\_funct\_1 \\ & \quad X0 X3)) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((v1\_relat\_1 X1) \wedge \\ & ((v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \Rightarrow \\ & ((v1\_relat\_1 (k2\_funct\_7 X1 X2 X3)) \wedge ((v4\_relat\_1 (k2\_funct\_7 \\ & X1 X2 X3) X0) \wedge ((v1\_funct\_1 (k2\_funct\_7 X1 X2 X3)) \wedge (v1\_partfun1 \\ & (k2\_funct\_7 X1 X2 X3) X0)))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X1) \wedge \\ & (v4\_relat\_1 X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \Rightarrow \\ & ((v1\_relat\_1 (k1\_pzfmisc1 X0 X1)) \wedge ((v4\_relat\_1 (k1\_pzfmisc1 \\ & X0 X1) X0) \wedge ((v1\_funct\_1 (k1\_pzfmisc1 X0 X1)) \wedge ((v1\_partfun1 (k1\_pzfmisc1 \\ & X0 X1) X0) \wedge (v16\_pencil\_1 (k1\_pzfmisc1 X0 X1) X0)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.v3\_card\_1 (k1\_tarski X0) np\_1 \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((v1\_relat\_1 X0)\wedge(v1\_funct\_1 \\ & X0))\Rightarrow((v1\_relat\_1 (k2\_funct\_7 X0 X1 X2))\wedge(v1\_funct\_1 (k2\_funct\_7 \\ & X0 X1 X2))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow((v16\_pencil\_1 X1 X0)\Leftrightarrow \\ & (\exists X2.(m1\_subset\_1 X2 X0)\wedge(\forall X3.(m1\_subset\_1 X3 X0)\Rightarrow \\ & ((X2\neq X3)\Rightarrow(v3\_card\_1 (k1\_funct\_1 X1 X3) np\_1)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & ((X2 = k1\_pzfmisc1 X0 X1)\Leftrightarrow(\forall X3.(X3 \in X0)\Rightarrow(k1\_funct\_1 X2 X3 = \\ & k1\_tarski (k1\_funct\_1 X1 X3)))) \end{aligned} \quad (9)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(\forall X1.((v1\_relat\_1 X1)\wedge( \\ & (v4\_relat\_1 X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow( \\ & \forall X2.\forall X3.v16\_pencil\_1 (k2\_funct\_7 (k1\_pzfmisc1 \\ & X0 X1) X2 X3) X0)) \end{aligned}$$