

t70\_pzfmisc1 (TMWBhU-  
RucYgh1MPHRt2vkKcpPurZ1RoPBdo)

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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  $r6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_pboole : \iota \Rightarrow \iota$  be given. Let  $k6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $r1\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_funcop\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. k1\_funct\_1 (k1\_pboole X1) X0 = k1\_xboole\_0 \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\ & (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & ((\forall X3. (X3 \in X0) \Rightarrow (k1\_funct\_1 X1 X3 = k1\_funct\_1 X2 X3)) \Rightarrow (X1 = \\ & X2))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((r1\_xboole\_0 X0 \\ & X1) \vee (r1\_xboole\_0 X2 X3)) \Rightarrow (r1\_xboole\_0 (k2\_zfmisc\_1 X0 X2) (k2\_zfmisc\_1 \\ & X1 X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\ & X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \wedge ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))))) \Rightarrow \\ & ((r6\_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\ X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ (k3\_pboole X0 X1 X1 = X1) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\ X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ ((v1\_relat\_1 (k6\_pboole X0 X1 X2))\wedge((v4\_relat\_1 (k6\_pboole X0 \\ X1 X2) X0)\wedge((v1\_funct\_1 (k6\_pboole X0 X1 X2))\wedge(v1\_partfun1 (k6\_pboole \\ X0 X1 X2) X0)))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\ X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ ((v1\_relat\_1 (k3\_pboole X0 X1 X2))\wedge((v4\_relat\_1 (k3\_pboole X0 \\ X1 X2) X0)\wedge((v1\_funct\_1 (k3\_pboole X0 X1 X2))\wedge(v1\_partfun1 (k3\_pboole \\ X0 X1 X2) X0)))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.(v1\_relat\_1 (k1\_pboole X0)\wedge((v4\_relat\_1 (k1\_pboole \\ X0) X0)\wedge((v1\_funct\_1 (k1\_pboole X0)\wedge(v1\_partfun1 (k1\_pboole \\ X0) X0)))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.(r1\_xboole\_0 X0 X1)\Leftrightarrow(k3\_xboole\_0 X0 X1 = \\ k1\_xboole\_0) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 \\ X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ (\forall X3.((v1\_relat\_1 X3)\wedge((v4\_relat\_1 X3 X0)\wedge((v1\_funct\_1 \\ X3)\wedge(v1\_partfun1 X3 X0))))\Rightarrow((X3 = k3\_pboole X0 X1 X2)\Leftrightarrow(\forall X4. \\ (X4 \in X0)\Rightarrow(k1\_funct\_1 X3 X4 = k3\_xboole\_0 (k1\_funct\_1 X1 X4) (k1\_funct\_1 \\ X2 X4)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\forall X0.k1\_pboole X0 = k7\_funcop\_1 X0 k1\_xboole\_0 \quad (11)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\
& (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\
& (\forall X3. ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 X0) \wedge ((v1\_funct\_1 \\
& X3) \wedge (v1\_partfun1 X3 X0)))) \Rightarrow ((X3 = k6\_pboole X0 X1 X2) \Leftrightarrow (\forall X4. \\
& (X4 \in X0) \Rightarrow (k1\_funct\_1 X3 X4 = k2\_zfmisc\_1 (k1\_funct\_1 X1 X4) (k1\_funct\_1 \\
& X2 X4))))))
\end{aligned} \tag{12}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\
& (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\
& (\forall X3. ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 X3 X0) \wedge ((v1\_funct\_1 \\
& X3) \wedge (v1\_partfun1 X3 X0)))) \Rightarrow (\forall X4. ((v1\_relat\_1 X4) \wedge ((v4\_relat\_1 \\
& X4 X0) \wedge ((v1\_funct\_1 X4) \wedge (v1\_partfun1 X4 X0)))) \Rightarrow (((r6\_pboole \\
& X0 (k3\_pboole X0 X1 X2) (k1\_pboole X0)) \vee (r6\_pboole X0 (k3\_pboole \\
& X0 X3 X4) (k1\_pboole X0))) \Rightarrow (r6\_pboole X0 (k3\_pboole X0 (k6\_pboole \\
& X0 X1 X3) (k6\_pboole X0 X2 X4)) (k1\_pboole X0))))))
\end{aligned}$$