

## t17\_mboolean

(TMXLemH8wZprJxPd9PAVN2bDUFQfFdo1CB6)

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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  $r2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_mboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_pboole : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. r1\_tarski (k2\_zfmisc\_1 X0 X1) (k1\_zfmisc\_1 (k1\_zfmisc\_1 (k2\_xboole\_0 X0 X1))) \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ (\forall X3. (X3 \in X0) \Rightarrow (k1\_funct\_1 (k1\_mboolean X0 (k2\_pboole X0 X1 X2)) X3 = k1\_zfmisc\_1 (k2\_xboole\_0 (k1\_funct\_1 X1 X3) (k1\_funct\_1 X2 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow ((v1\_relat\_1 (k1\_mboolean X0 X1)) \wedge ((v2\_relat\_1 (k1\_mboolean X0 X1)) \wedge ((v4\_relat\_1 (k1\_mboolean X0 X1) X0) \wedge ((v1\_funct\_1 (k1\_mboolean X0 X1)) \wedge (v1\_partfun1 (k1\_mboolean X0 X1) X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ & X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & ((v1\_relat\_1 (k6\_pboole X0 X1 X2))\wedge((v4\_relat\_1 (k6\_pboole X0 \\ & X1 X2) X0)\wedge((v1\_funct\_1 (k6\_pboole X0 X1 X2))\wedge(v1\_partfun1 (k6\_pboole \\ & X0 X1 X2) X0)))) \end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((v1\_relat\_1 X1)\wedge((v4\_relat\_1 \\ & X1 X0)\wedge((v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\wedge((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & ((v1\_relat\_1 (k2\_pboole X0 X1 X2))\wedge((v4\_relat\_1 (k2\_pboole X0 \\ & X1 X2) X0)\wedge((v1\_funct\_1 (k2\_pboole X0 X1 X2))\wedge(v1\_partfun1 (k2\_pboole \\ & X0 X1 X2) X0)))) \end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & ((r2\_pboole X0 X1 X2)\Leftrightarrow(\forall X3.(X3 \in X0)\Rightarrow(r1\_tarSKI (k1\_funct\_1 \\ & X1 X3) (k1\_funct\_1 X2 X3)))) \end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & ((X2 = k1\_mboolean X0 X1)\Leftrightarrow(\forall X3.(X3 \in X0)\Rightarrow(k1\_funct\_1 X2 X3 = \\ & k1\_zfmisc\_1 (k1\_funct\_1 X1 X3)))) \end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 X0)\wedge( \\ & (v1\_funct\_1 X1)\wedge(v1\_partfun1 X1 X0))))\Rightarrow(\forall X2.((v1\_relat\_1 \\ & X2)\wedge((v4\_relat\_1 X2 X0)\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 X0))))\Rightarrow \\ & (\forall X3.((v1\_relat\_1 X3)\wedge((v4\_relat\_1 X3 X0)\wedge((v1\_funct\_1 \\ & X3)\wedge(v1\_partfun1 X3 X0))))\Rightarrow((X3 = k6\_pboole X0 X1 X2)\Leftrightarrow(\forall X4. \\ & (X4 \in X0)\Rightarrow(k1\_funct\_1 X3 X4 = k2\_zfmisc\_1 (k1\_funct\_1 X1 X4) (k1\_funct\_1 \\ & X2 X4)))))) \end{aligned} \tag{8}$$

**Theorem 1**

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\ & (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & (r2\_pboole X0 (k6\_pboole X0 X1 X2) (k1\_mboolean X0 (k1\_mboolean \\ & X0 (k2\_pboole X0 X1 X2)))) \end{aligned}$$