

# t29\_mboolean (TMYah- WqBgSAQqr7SoVEHtzFsaxzKJcUDUeh)

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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  $k2\_mboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_mboolean : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_tarski : \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_relat\_1 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. k3\_tarski (k1\_zfmisc\_1 X0) = X0 \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\ & X1 X0) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \wedge ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))))) \Rightarrow \\ & ((r6\_pboole X0 X1 X2) \Leftrightarrow (X1 = X2)) \end{aligned} \quad (2)$$

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.

$$\begin{aligned} & \forall X0. \forall X1. ((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 X1 X0) \wedge \\ & (v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 X0)))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\ & X2) \wedge ((v4\_relat\_1 X2 X0) \wedge ((v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 X0)))) \Rightarrow \\ & ((X2 = k2\_mboolean X0 X1) \Leftrightarrow (\forall X3. (X3 \in X0) \Rightarrow (k1\_funct\_1 X2 X3 = \\ & k3\_tarski (k1\_funct\_1 X1 X3)))))) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 \ X1) \wedge ((v4\_relat\_1 \ X1 \ X0) \wedge ( \\
& \quad (v1\_funct\_1 \ X1) \wedge (v1\_partfun1 \ X1 \ X0)))) \Rightarrow (\forall X2. ((v1\_relat\_1 \\
& \quad X2) \wedge ((v4\_relat\_1 \ X2 \ X0) \wedge ((v1\_funct\_1 \ X2) \wedge (v1\_partfun1 \ X2 \ X0)))) \Rightarrow \\
& \quad ((X2 = k1\_mboolean \ X0 \ X1) \Leftrightarrow (\forall X3. (X3 \in X0) \Rightarrow (k1\_funct\_1 \ X2 \ X3 = \\
& \quad \quad k1\_zfmisc\_1 \ (k1\_funct\_1 \ X1 \ X3)))))
\end{aligned} \tag{5}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_relat\_1 \ X1) \wedge ((v4\_relat\_1 \ X1 \ X0) \wedge ( \\
& \quad (v1\_funct\_1 \ X1) \wedge (v1\_partfun1 \ X1 \ X0)))) \Rightarrow (r6\_pboole \ X0 \ (k2\_mboolean \\
& \quad \quad X0 \ (k1\_mboolean \ X0 \ X1)) \ X1)
\end{aligned}$$