

## t19\_bvfunc\_1

(TMKEpV6ewq2GtHwr6C5vqLY2ExfTAUV7R6p)

October 27, 2020

Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_margrel1 : \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k13\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k14\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k12\_bvfunc\_1 : \iota \Rightarrow \iota$  be given. Let  $k11\_bvfunc\_1 : \iota \Rightarrow \iota$  be given. Let  $k5\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_margrel1 : \iota$  be given. Let  $k8\_margrel1 : \iota$  be given. Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow ((r2\_funct\_2 X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k12\_bvfunc\_1 X0)) (k11\_bvfunc\_1 X0)) \wedge (r2\_funct\_2 X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k11\_bvfunc\_1 X0)) (k12\_bvfunc\_1 X0))) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (k1\_bvfunc\_1 X0 (k1\_bvfunc\_1 X0 X1) = X1) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X0) \wedge (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (k5\_bvfunc\_1 X0 X1 X1 = X1) \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0)\wedge((v1\_funct\_1 \\ & X1)\wedge((v1\_funct\_2 X1 X0 k6\_margrel1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 k6\_margrel1))))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 \\ & X2 X0 k6\_margrel1)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 k6\_margrel1))))))\Rightarrow((v1\_funct\_1 (k5\_bvfunc\_1 X0 X1 X2))\wedge( \\ & (v1\_funct\_2 (k5\_bvfunc\_1 X0 X1 X2) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k5\_bvfunc\_1 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((v1\_funct\_1 X1)\wedge( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1))))))\Rightarrow((v1\_funct\_1 (k1\_bvfunc\_1 \\ & X0 X1))\wedge((v1\_funct\_2 (k1\_bvfunc\_1 X0 X1) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k1\_bvfunc\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((v1\_funct\_1 X1)\wedge( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1))))))\Rightarrow((v1\_funct\_1 (k14\_bvfunc\_1 \\ & X0 X1))\wedge((v1\_funct\_2 (k14\_bvfunc\_1 X0 X1) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k14\_bvfunc\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((\neg v1\_xboole\_0 X0)\wedge((v1\_funct\_1 X1)\wedge( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1))))))\Rightarrow((v1\_funct\_1 (k13\_bvfunc\_1 \\ & X0 X1))\wedge((v1\_funct\_2 (k13\_bvfunc\_1 X0 X1) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k13\_bvfunc\_1 X0 X1) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow((v1\_funct\_1 (k12\_bvfunc\_1 X0))\wedge \\ & ((v1\_funct\_2 (k12\_bvfunc\_1 X0) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k12\_bvfunc\_1 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow((v1\_funct\_1 (k11\_bvfunc\_1 X0))\wedge \\ & ((v1\_funct\_2 (k11\_bvfunc\_1 X0) X0 k6\_margrel1)\wedge(m1\_subset\_1 \\ & (k11\_bvfunc\_1 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (((\forall X2.(m1\_subset\_1 \\
& X2 X0) \Rightarrow (k3\_funct\_2 X0 k6\_margrel1 X1 X2 = k7\_margrel1)) \Rightarrow (k14\_bvfunc\_1 \\
& X0 X1 = k11\_bvfunc\_1 X0)) \wedge ((\neg \forall X2.(m1\_subset\_1 X2 X0) \Rightarrow (k3\_funct\_2 \\
& X0 k6\_margrel1 X1 X2 = k7\_margrel1)) \Rightarrow (k14\_bvfunc\_1 X0 X1 = k12\_bvfunc\_1 \\
& X0)))) \\
& \tag{11}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (((\forall X2.(m1\_subset\_1 \\
& X2 X0) \Rightarrow (k3\_funct\_2 X0 k6\_margrel1 X1 X2 = k8\_margrel1)) \Rightarrow (k13\_bvfunc\_1 \\
& X0 X1 = k12\_bvfunc\_1 X0)) \wedge ((\neg \forall X2.(m1\_subset\_1 X2 X0) \Rightarrow (k3\_funct\_2 \\
& X0 k6\_margrel1 X1 X2 = k8\_margrel1)) \Rightarrow (k13\_bvfunc\_1 X0 X1 = k11\_bvfunc\_1 \\
& X0)))) \\
& \tag{12}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow ((X1 = k12\_bvfunc\_1 X0) \Leftrightarrow (\forall X2. \\
& (m1\_subset\_1 X2 X0) \Rightarrow (k3\_funct\_2 X0 k6\_margrel1 X1 X2 = k8\_margrel1)))) \\
& \tag{13}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow ((X1 = k11\_bvfunc\_1 X0) \Leftrightarrow (\forall X2. \\
& (m1\_subset\_1 X2 X0) \Rightarrow (k3\_funct\_2 X0 k6\_margrel1 X1 X2 = k7\_margrel1)))) \\
& \tag{14}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow ((r2\_funct\_2 X0 k6\_margrel1 \\
& (k1\_bvfunc\_1 X0 (k13\_bvfunc\_1 X0 X1)) (k14\_bvfunc\_1 X0 (k1\_bvfunc\_1 \\
& X0 X1))) \wedge (r2\_funct\_2 X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k14\_bvfunc\_1 \\
& X0 X1)) (k13\_bvfunc\_1 X0 (k1\_bvfunc\_1 X0 X1))))))
\end{aligned}$$