

## t13\_bvfunc11

(TMcAg1u35uPjJsebTX5pTSLFj5FBwBHFxjH)

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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  $k1\_bvfunc\_2 : \iota \Rightarrow \iota$  be given. Let  $m1\_eqrel\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_partit1 : \iota \Rightarrow \iota$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k1\_partit1 X0))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ X0 k6\_margrel1)))) \Rightarrow (\forall X3. (m1\_eqrel\_1 X3 X0) \Rightarrow (r2\_funct\_2 \\ X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k7\_bvfunc\_2 X0 X2 X1 X3)) (k6\_bvfunc\_2 \\ X0 (k1\_bvfunc\_1 X0 X2) X1 X3)))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k1\_partit1 X0))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ X0 k6\_margrel1)))) \Rightarrow (\forall X3. (m1\_eqrel\_1 X3 X0) \Rightarrow (r2\_funct\_2 \\ X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 X2 X1 X3)) (k7\_bvfunc\_2 \\ X0 (k1\_bvfunc\_1 X0 X2) X1 X3)))))) \end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ( \\
& (v1\_funct\_2 X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge ( \\
& (v1\_funct\_2 X3 X0 k6\_margrel1) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (((r1\_bvfunc\_1 X0 X1 X2) \wedge ( \\
& r1\_bvfunc\_1 X0 X2 X1)) \Rightarrow (r2\_funct\_2 X0 k6\_margrel1 X1 X2)) \wedge (((r1\_bvfunc\_1 \\
& X0 X1 X2) \wedge (r1\_bvfunc\_1 X0 X2 X3)) \Rightarrow (r1\_bvfunc\_1 X0 X1 X3)))))) \\
& \tag{3}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ( \\
& (v1\_funct\_2 X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X3.(m1\_subset\_1 X3 \\
& (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \Rightarrow (\forall X4.(m1\_eqrel\_1 X4 X0) \Rightarrow \\
& ((r1\_bvfunc\_1 X0 X1 X2) \Rightarrow (r1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 X1 X3 X4) \\
& (k6\_bvfunc\_2 X0 X2 X3 X4)))))) \\
& \tag{4}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\
& (k1\_partit1 X0))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 k6\_margrel1)))))) \Rightarrow (\forall X3.(m1\_eqrel\_1 X3 X0) \Rightarrow (r1\_bvfunc\_1 \\
& X0 X2 (k7\_bvfunc\_2 X0 X2 X1 X3)))))) \\
& \tag{5}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\
& (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ( \\
& (v1\_funct\_2 X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 ( \\
& k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow ((r1\_bvfunc\_1 X0 X1 X2) \Rightarrow (r1\_bvfunc\_1 \\
& X0 (k1\_bvfunc\_1 X0 X2) (k1\_bvfunc\_1 X0 X1)))))) \\
& \tag{6}
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2) \wedge \\
& ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\
& X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\
& X3) \Leftrightarrow (X2 = X3)) \\
& \tag{7}
\end{aligned}$$

Assume the following.

$$\forall X0.k1.bvfunc.2 X0 = k1.partit1 X0 \quad (8)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1.xboole.0 X0)\wedge((v1.funct.1 X1)\wedge \\ (v1.funct.2 X1 X0 k6.margrel1)\wedge(m1.subset.1 X1 (k1.zfmisc.1 ( \\ k2.zfmisc.1 X0 k6.margrel1))))))\Rightarrow(k1.bvfunc.1 X0 (k1.bvfunc.1 \\ X0 X1) = X1) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1.xboole.0 X0)\wedge \\ (((v1.funct.1 X1)\wedge((v1.funct.2 X1 X0 k6.margrel1)\wedge(m1.subset.1 \\ X1 (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1))))))\wedge((m1.subset.1 \\ X2 (k1.zfmisc.1 (k1.bvfunc.2 X0))\wedge(m1.eqrel.1 X3 X0))))\Rightarrow((v1.funct.1 \\ (k7.bvfunc.2 X0 X1 X2 X3)\wedge((v1.funct.2 (k7.bvfunc.2 X0 X1 X2 X3) \\ X0 k6.margrel1)\wedge(m1.subset.1 (k7.bvfunc.2 X0 X1 X2 X3) (k1.zfmisc.1 \\ (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1.xboole.0 X0)\wedge \\ (((v1.funct.1 X1)\wedge((v1.funct.2 X1 X0 k6.margrel1)\wedge(m1.subset.1 \\ X1 (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1))))))\wedge((m1.subset.1 \\ X2 (k1.zfmisc.1 (k1.bvfunc.2 X0))\wedge(m1.eqrel.1 X3 X0))))\Rightarrow((v1.funct.1 \\ (k6.bvfunc.2 X0 X1 X2 X3)\wedge((v1.funct.2 (k6.bvfunc.2 X0 X1 X2 X3) \\ X0 k6.margrel1)\wedge(m1.subset.1 (k6.bvfunc.2 X0 X1 X2 X3) (k1.zfmisc.1 \\ (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1.xboole.0 X0)\wedge((v1.funct.1 X1)\wedge \\ (v1.funct.2 X1 X0 k6.margrel1)\wedge(m1.subset.1 X1 (k1.zfmisc.1 ( \\ k2.zfmisc.1 X0 k6.margrel1))))))\Rightarrow((v1.funct.1 (k1.bvfunc.1 \\ X0 X1))\wedge((v1.funct.2 (k1.bvfunc.1 X0 X1) X0 k6.margrel1)\wedge(m1.subset.1 \\ (k1.bvfunc.1 X0 X1) (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (12)$$

**Theorem 1**

$$\begin{aligned} \forall X0.(\neg v1.xboole.0 X0)\Rightarrow(\forall X1.((v1.funct.1 X1)\wedge \\ (v1.funct.2 X1 X0 k6.margrel1)\wedge(m1.subset.1 X1 (k1.zfmisc.1 ( \\ k2.zfmisc.1 X0 k6.margrel1))))))\Rightarrow(\forall X2.(m1.subset.1 X2 \\ (k1.zfmisc.1 (k1.bvfunc.2 X0))\Rightarrow(\forall X3.(m1.eqrel.1 X3 X0)\Rightarrow \\ (\forall X4.(m1.eqrel.1 X4 X0)\Rightarrow(r1.bvfunc.1 X0 (k1.bvfunc.1 X0 \\ (k7.bvfunc.2 X0 (k6.bvfunc.2 X0 X1 X2 X3) X2 X4)) (k7.bvfunc.2 X0 \\ (k7.bvfunc.2 X0 (k1.bvfunc.1 X0 X1) X2 X4) X2 X3)))))) \end{aligned}$$