

## t45\_bvfunc11

(TMTHm9SAEdFFLUfjzcoKXiggBJD9DCQA64U)

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  $k1\_bvfunc\_2 : \iota \Rightarrow \iota$  be given. Let  $m1\_eqrel\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow o$  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  $k6\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  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.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. ((v1\_funct\_1 X1) \wedge ( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2. (m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \Rightarrow (\forall X3. (m1\_eqrel\_1 X3 X0) \Rightarrow \\ & (\forall X4. (m1\_eqrel\_1 X4 X0) \Rightarrow ((v2\_bvfunc\_2 X2 X0) \Rightarrow (r1\_bvfunc\_1 \\ & X0 (k1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 (k7\_bvfunc\_2 X0 X1 X2 X3) X2 X4)) \\ & (k7\_bvfunc\_2 X0 (k1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 X1 X2 X4)) X2 X3)))))) \\ & \hspace{15em} (1) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k1\_partit1 X0))) \Rightarrow (\forall X2. ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 k6\_margrel1)))))) \Rightarrow (\forall X3. (m1\_eqrel\_1 X3 X0) \Rightarrow (r2\_funct\_2 \\ & X0 k6\_margrel1 (k1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 X2 X1 X3)) (k7\_bvfunc\_2 \\ & X0 (k1\_bvfunc\_1 X0 X2) X1 X3)))) \\ & \hspace{15em} (2) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge \\ & ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\ & X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\ & X3) \Leftrightarrow (X2 = X3)) \\ & \hspace{15em} (3) \end{aligned}$$

Assume the following.

$$\forall X0.k1\_bvfunc\_2 X0 = k1\_partit1 X0 \quad (4)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge \\ & (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \wedge ((m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \wedge (m1\_eqrel\_1 X3 X0)))) \Rightarrow ((v1\_funct\_1 \\ & (k6\_bvfunc\_2 X0 X1 X2 X3)) \wedge ((v1\_funct\_2 (k6\_bvfunc\_2 X0 X1 X2 X3) \\ & X0 k6\_margrel1) \wedge (m1\_subset\_1 (k6\_bvfunc\_2 X0 X1 X2 X3) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \end{aligned} \quad (6)$$

Assume the following.

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

**Theorem 1**

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \Rightarrow (\forall X3.(m1\_eqrel\_1 X3 X0) \Rightarrow \\ & (\forall X4.(m1\_eqrel\_1 X4 X0) \Rightarrow ((v2\_bvfunc\_2 X2 X0) \Rightarrow (r1\_bvfunc\_1 \\ & X0 (k1\_bvfunc\_1 X0 (k6\_bvfunc\_2 X0 (k7\_bvfunc\_2 X0 X1 X2 X3) X2 X4)) \\ & (k7\_bvfunc\_2 X0 (k7\_bvfunc\_2 X0 (k1\_bvfunc\_1 X0 X1) X2 X4) X2 X3)))))) \end{aligned}$$