

t19\_bvfunc\_4  
(TMXK64CUtse7z42tq9WpYLyStdYGAWTEHtV)

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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  $r3\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_bvfunc\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_bvfunc\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_partit1 : \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge \\ & ((v1\_funct\_2 X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \Rightarrow (r2\_funct\_2 X0 k6\_margrel1 \\ & (k5\_bvfunc\_1 X0 X1 (k2\_bvfunc\_1 X0 X1 X2)) X1))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k1\_partit1 X0))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 k6\_margrel1)))))) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 \\ & X3 X0 k6\_margrel1) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 k6\_margrel1)))))) \Rightarrow (\forall X4.(m1\_eqrel\_1 X4 X0) \Rightarrow ((r3\_bvfunc\_2 \\ & X0 X2 X1 X4) \Rightarrow (r2\_funct\_2 X0 k6\_margrel1 (k7\_bvfunc\_2 X0 (k2\_bvfunc\_1 \\ & X0 X2 X3) X1 X4) (k2\_bvfunc\_1 X0 X2 (k7\_bvfunc\_2 X0 X3 X1 X4))))))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & \quad (k1\_partit1 X0))) \Rightarrow (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & \quad X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 k6\_margrel1)))) \Rightarrow (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 \\ & \quad X3 X0 k6\_margrel1) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 k6\_margrel1)))) \Rightarrow (\forall X4.(m1\_eqrel\_1 X4 X0) \Rightarrow ((r3\_bvfunc\_2 \\ & \quad X0 X2 X1 X4) \Rightarrow (r2\_funct\_2 X0 k6\_margrel1 (k7\_bvfunc\_2 X0 (k5\_bvfunc\_1 \\ & \quad X0 X2 X3) X1 X4) (k5\_bvfunc\_1 X0 X2 (k7\_bvfunc\_2 X0 X3 X1 X4))))))))) \end{aligned} \quad (3)$$

Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((v1\_funct\_1 X2) \wedge \\ & \quad ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 X1)))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\ & \quad X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\ & \quad X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0.k1\_bvfunc\_2 X0 = k1\_partit1 X0 \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0) \wedge (((v1\_funct\_1 \\ & \quad X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & \quad X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 k6\_margrel1)))))) \Rightarrow (k5\_bvfunc\_1 X0 X1 X1 = X1) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0) \wedge (((v1\_funct\_1 \\ & \quad X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & \quad (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & \quad X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & \quad X0 k6\_margrel1)))))) \Rightarrow (k2\_bvfunc\_1 X0 X1 X1 = X1) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1\_xboole\_0 X0) \wedge \\ & (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 \\ & X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1)))))) \wedge ((m1\_subset\_1 \\ & X2 (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \wedge (m1\_eqrel\_1 X3 X0))) \Rightarrow ((v1\_funct\_1 \\ & (k7\_bvfunc\_2 X0 X1 X2 X3)) \wedge ((v1\_funct\_2 (k7\_bvfunc\_2 X0 X1 X2 X3) \\ & X0 k6\_margrel1) \wedge (m1\_subset\_1 (k7\_bvfunc\_2 X0 X1 X2 X3) (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 k6\_margrel1))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X0) \wedge (((v1\_funct\_1 \\ & X1) \wedge ((v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ & (k2\_zfmisc\_1 X0 k6\_margrel1))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\ & X2 X0 k6\_margrel1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & X0 k6\_margrel1))))) \Rightarrow ((v1\_funct\_1 (k5\_bvfunc\_1 X0 X1 X2)) \wedge ( \\ & (v1\_funct\_2 (k5\_bvfunc\_1 X0 X1 X2) X0 k6\_margrel1) \wedge (m1\_subset\_1 \\ & (k5\_bvfunc\_1 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 k6\_margrel1))))) \end{aligned} \quad (10)$$

Assume the following.

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

### Theorem 1

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1.((v1\_funct\_1 X1) \wedge ( \\ & (v1\_funct\_2 X1 X0 k6\_margrel1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 ( \\ & k2\_zfmisc\_1 X0 k6\_margrel1))))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 \\ & (k1\_zfmisc\_1 (k1\_bvfunc\_2 X0))) \Rightarrow (\forall X3.(m1\_eqrel\_1 X3 X0) \Rightarrow \\ & ((r3\_bvfunc\_2 X0 X1 X2 X3) \Rightarrow (r1\_bvfunc\_1 X0 (k7\_bvfunc\_2 X0 X1 X2 \\ & X3) X1)))) \end{aligned}$$