

t31_bvfunc11 (TMKn-
WuzbHU3tiQaMcE7gMRt2Trah9QZyWkS)

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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 $v2_bvfunc_2 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r1_bvfunc_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_bvfunc_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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 $k1_partit1 : \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_funct_1 X1) \wedge (\\ (v1_funct_2 X1 X0 k6_margrel1) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (\\ k2_zfmisc_1 X0 k6_margrel1)))))) \Rightarrow (\forall X2.(m1_subset_1 X2 \\ (k1_zfmisc_1 (k1_bvfunc_2 X0))) \Rightarrow (\forall X3.(m1_eqrel_1 X3 X0) \Rightarrow \\ (\forall X4.(m1_eqrel_1 X4 X0) \Rightarrow ((v2_bvfunc_2 X2 X0) \Rightarrow (r1_bvfunc_1 \\ X0 (k7_bvfunc_2 X0 (k6_bvfunc_2 X0 (k1_bvfunc_1 X0 X1) X2 X3) X2 X4) \\ (k1_bvfunc_1 X0 (k6_bvfunc_2 X0 (k6_bvfunc_2 X0 X1 X2 X4) X2 X3)))))))))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 \\ (k1_partit1 X0))) \Rightarrow (\forall X2.((v1_funct_1 X2) \wedge ((v1_funct_2 \\ X2 X0 k6_margrel1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ X0 k6_margrel1)))))) \Rightarrow (\forall X3.(m1_eqrel_1 X3 X0) \Rightarrow (r2_funct_2 \\ X0 k6_margrel1 (k1_bvfunc_1 X0 (k6_bvfunc_2 X0 X2 X1 X3)) (k7_bvfunc_2 \\ X0 (k1_bvfunc_1 X0 X2) X1 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.(((v1_funct_1 X2) \wedge \\ ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ X0 X1)))))) \wedge ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X0 X1) \wedge (m1_subset_1 \\ X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))))) \Rightarrow ((r2_funct_2 X0 X1 X2 \\ X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.k1.bvfunc.2 X0 = k1.partit1 X0 \quad (4)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1.xboole.0 X0) \wedge ((v1.funct.1 X1) \wedge \\ (v1.funct.2 X1 X0 k6.margrel1) \wedge (m1.subset.1 X1 (k1.zfmisc.1 (\\ k2.zfmisc.1 X0 k6.margrel1)))))) \Rightarrow (k1.bvfunc.1 X0 (k1.bvfunc.1 \\ X0 X1) = X1) \end{aligned} \quad (5)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1.xboole.0 X0) \wedge \\ ((v1.funct.1 X1) \wedge ((v1.funct.2 X1 X0 k6.margrel1) \wedge (m1.subset.1 \\ X1 (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1)))))) \wedge ((m1.subset.1 \\ X2 (k1.zfmisc.1 (k1.bvfunc.2 X0))) \wedge (m1.eqrel.1 X3 X0))) \Rightarrow ((v1.funct.1 \\ (k7.bvfunc.2 X0 X1 X2 X3)) \wedge ((v1.funct.2 (k7.bvfunc.2 X0 X1 X2 X3) \\ X0 k6.margrel1) \wedge (m1.subset.1 (k7.bvfunc.2 X0 X1 X2 X3) (k1.zfmisc.1 \\ (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (6)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1.xboole.0 X0) \wedge \\ (((v1.funct.1 X1) \wedge ((v1.funct.2 X1 X0 k6.margrel1) \wedge (m1.subset.1 \\ X1 (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1)))))) \wedge ((m1.subset.1 \\ X2 (k1.zfmisc.1 (k1.bvfunc.2 X0))) \wedge (m1.eqrel.1 X3 X0))) \Rightarrow ((v1.funct.1 \\ (k6.bvfunc.2 X0 X1 X2 X3)) \wedge ((v1.funct.2 (k6.bvfunc.2 X0 X1 X2 X3) \\ X0 k6.margrel1) \wedge (m1.subset.1 (k6.bvfunc.2 X0 X1 X2 X3) (k1.zfmisc.1 \\ (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (7)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.((\neg v1.xboole.0 X0) \wedge ((v1.funct.1 X1) \wedge \\ (v1.funct.2 X1 X0 k6.margrel1) \wedge (m1.subset.1 X1 (k1.zfmisc.1 (\\ k2.zfmisc.1 X0 k6.margrel1)))))) \Rightarrow ((v1.funct.1 (k1.bvfunc.1 \\ X0 X1)) \wedge ((v1.funct.2 (k1.bvfunc.1 X0 X1) X0 k6.margrel1) \wedge (m1.subset.1 \\ (k1.bvfunc.1 X0 X1) (k1.zfmisc.1 (k2.zfmisc.1 X0 k6.margrel1)))))) \end{aligned} \quad (8)$$

Theorem 1

$$\begin{aligned} \forall X0.(\neg v1.xboole.0 X0) \Rightarrow (\forall X1.((v1.funct.1 X1) \wedge \\ (v1.funct.2 X1 X0 k6.margrel1) \wedge (m1.subset.1 X1 (k1.zfmisc.1 (\\ k2.zfmisc.1 X0 k6.margrel1)))))) \Rightarrow (\forall X2.(m1.subset.1 X2 \\ (k1.zfmisc.1 (k1.bvfunc.2 X0))) \Rightarrow (\forall X3.(m1.eqrel.1 X3 X0) \Rightarrow \\ (\forall X4.(m1.eqrel.1 X4 X0) \Rightarrow ((v2.bvfunc.2 X2 X0) \Rightarrow (r1.bvfunc.1 \\ X0 (k7.bvfunc.2 X0 (k1.bvfunc.1 X0 (k7.bvfunc.2 X0 X1 X2 X3)) X2 X4) \\ (k1.bvfunc.1 X0 (k6.bvfunc.2 X0 (k6.bvfunc.2 X0 X1 X2 X4) X2 X3)))))) \end{aligned}$$