

t14_binop_1
(TMZpex3o5i82CvwXwVtwEtEeLeiRKoHKfEc)

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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 $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $v1_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r6_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $r4_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_funct_1 X1) \wedge (\\ & (v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \Rightarrow (\forall X2. ((v1_funct_1 \\ & X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \Rightarrow ((v1_binop_1 X2 X0) \Rightarrow \\ & ((r6_binop_1 X0 X2 X1) \Leftrightarrow (\forall X3. (m1_subset_1 X3 X0) \Rightarrow (\forall X4. \\ & (m1_subset_1 X4 X0) \Rightarrow (\forall X5. (m1_subset_1 X5 X0) \Rightarrow (k3_binop_1 \\ & X0 X2 X3 (k3_binop_1 X0 X1 X4 X5) = k3_binop_1 X0 X1 (k3_binop_1 X0 X2 \\ & X3 X4) (k3_binop_1 X0 X2 X3 X5)))))))))) \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\ & X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & X0 X0) X0)))))) \Rightarrow (\forall X2. ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (\\ & k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 X0 X0) X0)))))) \Rightarrow ((r4_binop_1 X0 X1 X2) \Leftrightarrow (\forall X3. \\ & (m1_subset_1 X3 X0) \Rightarrow (\forall X4. (m1_subset_1 X4 X0) \Rightarrow (\forall X5. \\ & (m1_subset_1 X5 X0) \Rightarrow (k3_binop_1 X0 X1 X3 (k3_binop_1 X0 X2 X4 X5) = \\ & k3_binop_1 X0 X2 (k3_binop_1 X0 X1 X3 X4) (k3_binop_1 X0 X1 X3 X5)))))))))) \end{aligned} \tag{2}$$

Theorem 1

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_funct_1 X1) \wedge \\ & (v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \Rightarrow (\forall X2. ((v1_funct_1 \\ X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \Rightarrow ((v1_binop_1 X2 X0) \Rightarrow \\ & ((r6_binop_1 X0 X2 X1) \Leftrightarrow (r4_binop_1 X0 X2 X1)))) \end{aligned}$$