

t15_binop_1 (TMYVYLDVUIdFWBzBD- NAknLBBk35aVtzZCvH)

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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 $r5_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\
& X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
& X0 X0) X0)))))) \Rightarrow (\forall X2. ((v1_funct_1 X2) \wedge ((v1_funct_2 X2 (\\
& k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 X0 X0) X0)))))) \Rightarrow ((r5_binop_1 X0 X1 X2) \Leftrightarrow (\forall X3. \\
& (m1_subset_1 X3 X0) \Rightarrow (\forall X4. (m1_subset_1 X4 X0) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 X0) \Rightarrow (k3_binop_1 X0 X1 (k3_binop_1 X0 X2 X3 X4) X5 = \\
& k3_binop_1 X0 X2 (k3_binop_1 X0 X1 X3 X5) (k3_binop_1 X0 X1 X4 X5))))))))))
\end{aligned} \tag{2}$$

Theorem 1

$$\begin{aligned} & \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. ((v1_funct_1 X1) \wedge \\ & (v1_funct_2 X1 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \Rightarrow (\forall X2. ((v1_funct_1 \\ X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))) \Rightarrow ((v1_binop_1 X2 X0) \Rightarrow \\ & ((r6_binop_1 X0 X2 X1) \Leftrightarrow (r5_binop_1 X0 X2 X1)))) \end{aligned}$$