

t12_binop_1
(TMLc3Vdmf7PVHZJBF1bygAdj1REsH6GmpC)

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

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

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\
& X0 X0) X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
& X0 X0) X0)))) \Rightarrow ((v1_binop_1 X1 X0) \Leftrightarrow (\forall X2. (m1_subset_1 X2 \\
& X0) \Rightarrow (\forall X3. (m1_subset_1 X3 X0) \Rightarrow (k3_binop_1 X0 X1 X2 X3 = k3_binop_1 \\
& X0 X1 X3 X2))))
\end{aligned} \tag{3}$$

Theorem 1

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