

t6_funcsdm (TM-
Nuf6Pdb1AH7mzPxEbRVxVcVv7Q2nkdUGM)

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Let $m2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k9_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_funcsdm : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5_funcsdm : \iota \Rightarrow \iota$ be given. 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 $v2_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k6_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_funcop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funcsdm : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k33_binop_2 : \iota$ be given. Let $v1_binop_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0. (\neg v1_xboole_0 X0) \Rightarrow (\forall X1. \forall X2. ((v1_funct_1 \\
& X2) \wedge ((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0)))))) \Rightarrow (\forall X3. ((v1_funct_1 \\
& X3) \wedge ((v1_funct_2 X3 X1 X0) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\
& X1 X0)))))) \Rightarrow (\forall X4. ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 X1 X0) \wedge \\
& (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0)))))) \Rightarrow (\forall X5. \\
& ((v1_funct_1 X5) \wedge ((v1_funct_2 X5 X1 X0) \wedge (m1_subset_1 X5 (k1_zfmisc_1 \\
& (k2_zfmisc_1 X1 X0)))))) \Rightarrow ((v2_binop_1 X2 X0) \Rightarrow (r2_funct_2 X1 X0 \\
& (k6_funcop_1 X0 X1 X2 (k6_funcop_1 X0 X1 X2 X3 X4) X5) (k6_funcop_1 \\
& X0 X1 X2 X3 (k6_funcop_1 X0 X1 X2 X4 X5))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((v1_funct_1 X2) \wedge \\
& ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\
& X0 X1)))))) \wedge ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X0 X1) \wedge (m1_subset_1 \\
& X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))))) \Rightarrow ((r2_funct_2 X0 X1 X2 \\
& X3) \Leftrightarrow (X2 = X3))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X1)\wedge(m1_funct_2 X2 X0 X1))\Rightarrow(\forall X3.(m2_funct_2 X3 X0 X1 X2)\Leftrightarrow(m1_subset_1 X3 X2)) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 X0)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0))))))\wedge(((v1_funct_1 X3)\wedge((v1_funct_2 X3 X1 X0)\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))\wedge((v1_funct_1 X4)\wedge((v1_funct_2 X4 X1 X0)\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))))\Rightarrow(k6_funcop_1 X0 X1 X2 X3 X4 = k3_funcop_1 X2 X3 X4) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 X0)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0)\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) X0))))))\wedge(((v1_funct_1 X3)\wedge((v1_funct_2 X3 X1 X0)\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))\wedge((v1_funct_1 X4)\wedge((v1_funct_2 X4 X1 X0)\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))))\Rightarrow(k3_funcsdm X0 X1 X2 X3 X4 = k3_funcop_1 X2 X3 X4) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 X1)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 (k9_funct_2 X0 X1) (k9_funct_2 X0 X1)) (k9_funct_2 X0 X1))\wedge(m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k9_funct_2 X0 X1) (k9_funct_2 X0 X1)) (k9_funct_2 X0 X1)))))\wedge((m1_subset_1 X3 (k9_funct_2 X0 X1))\wedge(m1_subset_1 X4 (k9_funct_2 X0 X1))))))\Rightarrow(k1_funcsdm X0 X1 X2 X3 X4 = k1_binop_1 X2 X3 X4) \quad (6)$$

Assume the following.

$$(v1_funct_1 k33_binop_2)\wedge((v1_funct_2 k33_binop_2 (k2_zfmisc_1 k1_numbers k1_numbers) k1_numbers)\wedge((v1_binop_1 k33_binop_2 k1_numbers)\wedge(v2_binop_1 k33_binop_2 k1_numbers))) \quad (7)$$

Assume the following.

$$\neg v1_xboole_0 k1_numbers \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X1)\wedge(m1_funct_2 \\ & X2 X0 X1))\Rightarrow(\forall X3.(m2_funct_2 X3 X0 X1 X2)\Rightarrow((v1_funct_1 X3)\wedge \\ & ((v1_funct_2 X3 X0 X1)\wedge(m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\ & X0 X1)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.(\neg v1_xboole_0 X1)\Rightarrow(m1_funct_2 (k9_funct_2 X0 X1) X0 X1) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X0)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 X0 X0) X0)\wedge \\ & (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 X0 X0) \\ & X0))))))\wedge(((v1_funct_1 X3)\wedge((v1_funct_2 X3 X1 X0)\wedge(m1_subset_1 \\ & X3 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))\wedge((v1_funct_1 X4)\wedge((v1_funct_2 \\ & X4 X1 X0)\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 X1 X0))))))\Rightarrow \\ & ((v1_funct_1 (k6_funcop_1 X0 X1 X2 X3 X4))\wedge((v1_funct_2 (k6_funcop_1 \\ & X0 X1 X2 X3 X4) X1 X0)\wedge(m1_subset_1 (k6_funcop_1 X0 X1 X2 X3 X4) (k1_zfmisc_1 \\ & (k2_zfmisc_1 X1 X0)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.(v1_funct_1 (k5_funcsdom X0))\wedge((v1_funct_2 (k5_funcsdom \\ & X0) (k2_zfmisc_1 (k9_funct_2 X0 k1_numbers) (k9_funct_2 X0 k1_numbers)) \\ & (k9_funct_2 X0 k1_numbers))\wedge(m1_subset_1 (k5_funcsdom X0) (k1_zfmisc_1 \\ & (k2_zfmisc_1 (k2_zfmisc_1 (k9_funct_2 X0 k1_numbers) (k9_funct_2 \\ & X0 k1_numbers)) (k9_funct_2 X0 k1_numbers)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & (v1_funct_1 k33_binop_2)\wedge((v1_funct_2 k33_binop_2 (k2_zfmisc_1 \\ & k1_numbers k1_numbers) k1_numbers)\wedge(m1_subset_1 k33_binop_2 \\ & (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 k1_numbers k1_numbers) \\ & k1_numbers)))) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X1)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 (k9_funct_2 \\ & X0 X1) (k9_funct_2 X0 X1)) (k9_funct_2 X0 X1))\wedge(m1_subset_1 X2 (\\ & k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k9_funct_2 X0 X1) (k9_funct_2 \\ & X0 X1) (k9_funct_2 X0 X1))))))\wedge((m1_subset_1 X3 (k9_funct_2 X0 \\ & X1))\wedge(m1_subset_1 X4 (k9_funct_2 X0 X1))))))\Rightarrow(m2_funct_2 (k1_funcsdom \\ & X0 X1 X2 X3 X4) X0 X1 (k9_funct_2 X0 X1)) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 \\
& (k9_funct_2 X0 k1_numbers) (k9_funct_2 X0 k1_numbers)) (k9_funct_2 \\
& X0 k1_numbers)) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
& (k9_funct_2 X0 k1_numbers) (k9_funct_2 X0 k1_numbers)) (k9_funct_2 \\
& X0 k1_numbers)))))) \Rightarrow ((X1 = k5_funcsdom X0) \Leftrightarrow (\forall X2. (m2_funct_2 \\
& X2 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow (\forall X3. (m2_funct_2 \\
& X3 X0 k1_numbers (k9_funct_2 X0 k1_numbers)) \Rightarrow (r2_funct_2 X0 k1_numbers \\
& (k1_funcsdom X0 k1_numbers X1 X2 X3) (k3_funcsdom k1_numbers X0 \\
& k33_binop_2 X2 X3))))))
\end{aligned} \tag{15}$$

Theorem 1

$$\begin{aligned}
& \forall X0. \forall X1. (m2_funct_2 X1 X0 k1_numbers (k9_funct_2 \\
& X0 k1_numbers)) \Rightarrow (\forall X2. (m2_funct_2 X2 X0 k1_numbers (k9_funct_2 \\
& X0 k1_numbers)) \Rightarrow (\forall X3. (m2_funct_2 X3 X0 k1_numbers (k9_funct_2 \\
& X0 k1_numbers)) \Rightarrow (r2_funct_2 X0 k1_numbers (k1_funcsdom X0 k1_numbers \\
& (k5_funcsdom X0) X1 (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) \\
& X2 X3)) (k1_funcsdom X0 k1_numbers (k5_funcsdom X0) (k1_funcsdom \\
& X0 k1_numbers (k5_funcsdom X0) X1 X2) X3))))))
\end{aligned}$$