

t12_lpspace1 (TMSYo- DQwZpxZREH1jHmEZwDEFP6o8o89UQC)

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Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $m2_rfunct_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_numbers : \iota$ be given. Let $k3_rfunct_3 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_lpspace1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_lpspace1 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $m1_rfunct_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_membered : \iota \Rightarrow o$ be given. Let $k7_rfunct_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k18_valued_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_funct_1 : \iota \Rightarrow o$ be given. Let $v1_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((m1_subset_1 X2 \\ & (k1_zfmisc_1 (k2_zfmisc_1 X0 X1))) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1)))) \Rightarrow ((r2_relset_1 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1_xboole_0 X2) \wedge (m1_rfunct_3 \\ & X2 X0 X1)) \Rightarrow (\forall X3. (m2_rfunct_3 X3 X0 X1 X2) \Leftrightarrow (m1_subset_1 X3 \\ & X2)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0 X0) \wedge \\ & ((v3_membered X1) \wedge ((m1_subset_1 X2 (k3_rfunct_3 X0 X1)) \wedge (m1_subset_1 \\ & X3 (k3_rfunct_3 X0 X1)))))) \Rightarrow (k7_rfunct_3 X0 X1 X2 X3 = k18_valued_1 \\ & X2 X3) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. k3_rfunct_3 X0 X1 = k4_partfun1 X0 X1 \quad (4)$$

Assume the following.

$$v3_membered k1_numbers \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\neg v1_xboole_0 (k4_partfun1 X0 X1) \quad (6)$$

Assume the following.

$$\neg v1_xboole_0 k1_numbers \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1_xboole_0 X2)\wedge(m1_rfunct_3 \\ & X2 X0 X1))\Rightarrow(\forall X3.(m2_rfunct_3 X3 X0 X1 X2)\Rightarrow((v1_funct_1 X3)\wedge \\ & (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0)\wedge \\ & ((v3_membered X1)\wedge((m1_subset_1 X2 (k3_rfunct_3 X0 X1))\wedge(m1_subset_1 \\ & X3 (k3_rfunct_3 X0 X1))))))\Rightarrow(m2_rfunct_3 (k7_rfunct_3 X0 X1 X2 X3) \\ & X0 k1_numbers (k3_rfunct_3 X0 k1_numbers)) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.m1_rfunct_3 (k3_rfunct_3 X0 X1) X0 X1 \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1_xboole_0 X0)\Rightarrow((v1_funct_1 (k3_lpspace1 X0))\wedge \\ & ((v1_funct_2 (k3_lpspace1 X0) (k2_zfmisc_1 (k3_rfunct_3 X0 k1_numbers) \\ & (k3_rfunct_3 X0 k1_numbers)) (k3_rfunct_3 X0 k1_numbers))\wedge(m1_subset_1 \\ & (k3_lpspace1 X0) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k3_rfunct_3 \\ & X0 k1_numbers) (k3_rfunct_3 X0 k1_numbers)) (k3_rfunct_3 X0 k1_numbers)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1_xboole_0 \\ & X0)\wedge((\neg v1_xboole_0 X1)\wedge(((v1_funct_1 X2)\wedge((v1_funct_2 X2 (k2_zfmisc_1 \\ & (k3_rfunct_3 X0 X1) (k3_rfunct_3 X0 X1)) (k3_rfunct_3 X0 X1))\wedge(\\ & m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k3_rfunct_3 \\ & X0 X1) (k3_rfunct_3 X0 X1)) (k3_rfunct_3 X0 X1))))))\wedge((m1_subset_1 \\ & X3 (k3_rfunct_3 X0 X1))\wedge(m1_subset_1 X4 (k3_rfunct_3 X0 X1))))))\Rightarrow \\ & (m2_rfunct_3 (k2_lpspace1 X0 X1 X2 X3 X4) X0 X1 (k3_rfunct_3 X0 X1)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.((v1_funct_1 X1) \wedge (\\
& (v1_funct_2 X1 (k2_zfmisc_1 (k3_rfunct_3 X0 k1_numbers) (k3_rfunct_3 \\
& X0 k1_numbers)) (k3_rfunct_3 X0 k1_numbers)) \wedge (m1_subset_1 X1 \\
& (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (k3_rfunct_3 X0 k1_numbers) \\
& (k3_rfunct_3 X0 k1_numbers)) (k3_rfunct_3 X0 k1_numbers)))))) \Rightarrow \\
& ((X1 = k3_lpspace1 X0) \Leftrightarrow (\forall X2.(m2_rfunct_3 X2 X0 k1_numbers \\
& (k3_rfunct_3 X0 k1_numbers)) \Rightarrow (\forall X3.(m2_rfunct_3 X3 X0 k1_numbers \\
& (k3_rfunct_3 X0 k1_numbers)) \Rightarrow (r2_relset_1 X0 k1_numbers (k2_lpspace1 \\
& X0 k1_numbers X1 X2 X3) (k7_rfunct_3 X0 k1_numbers X2 X3))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_xboole_0 X0) \wedge \\
& ((v3_membered X1) \wedge ((m1_subset_1 X2 (k3_rfunct_3 X0 X1)) \wedge (m1_subset_1 \\
& X3 (k3_rfunct_3 X0 X1)))))) \Rightarrow (k7_rfunct_3 X0 X1 X2 X3 = k7_rfunct_3 \\
& X0 X1 X3 X2)
\end{aligned} \tag{14}$$

Theorem 1

$$\begin{aligned}
& \forall X0.(\neg v1_xboole_0 X0) \Rightarrow (\forall X1.(m2_rfunct_3 X1 X0 k1_numbers \\
& (k3_rfunct_3 X0 k1_numbers)) \Rightarrow (\forall X2.(m2_rfunct_3 X2 X0 k1_numbers \\
& (k3_rfunct_3 X0 k1_numbers)) \Rightarrow (r2_relset_1 X0 k1_numbers (k2_lpspace1 \\
& X0 k1_numbers (k3_lpspace1 X0) X1 X2) (k2_lpspace1 X0 k1_numbers \\
& (k3_lpspace1 X0) X2 X1))))
\end{aligned}$$