

# t11\_lpspace1 (TMWpXQBrCwYK- LioyQy2GRPnyyoMBJw632ZY)

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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  $k13\_rfunct\_3 : \iota \Rightarrow \iota$  be given. Let  $v2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $k4\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (v2\_binop\_1 (k13\_rfunct\_3 X0) (k3\_rfunct\_3 X0 k1\_numbers)) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. ((m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))) \Rightarrow ((r2\_relset\_1 X0 X1 X2 X3) \Leftrightarrow (X2 = X3)) \quad (2)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((\neg v1\_xboole\_0 X2) \wedge (m1\_rfunct\_3 X2 X0 X1)) \Rightarrow (\forall X3. (m2\_rfunct\_3 X3 X0 X1 X2) \Leftrightarrow (m1\_subset\_1 X3 X2)) \quad (3)$$

Assume the following.

$$\forall X0. \forall X1. k3\_rfunct\_3 X0 X1 = k4\_partfun1 X0 X1 \quad (4)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 X0 X0) X0)))))) \wedge ((m1\_subset\_1 X2 X0) \wedge (m1\_subset\_1 X3 X0))) \Rightarrow (k3\_binop\_1 X0 X1 X2 X3 = k1\_binop\_1 X1 X2 X3) \quad (5)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1\_xboole\_0 \\ & X0)\wedge((\neg v1\_xboole\_0 X1)\wedge(((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (k2\_zfmisc\_1 \\ & (k3\_rfunct\_3 X0 X1) (k3\_rfunct\_3 X0 X1)) (k3\_rfunct\_3 X0 X1))\wedge( \\ & m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k3\_rfunct\_3 \\ & X0 X1) (k3\_rfunct\_3 X0 X1)) (k3\_rfunct\_3 X0 X1))))))\wedge((m1\_subset\_1 \\ & X3 (k3\_rfunct\_3 X0 X1))\wedge(m1\_subset\_1 X4 (k3\_rfunct\_3 X0 X1))))))\Rightarrow \\ & (k2\_lpspace1 X0 X1 X2 X3 X4 = k1\_binop\_1 X2 X3 X4) \end{aligned} \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.\neg v1\_xboole\_0 (k4\_partfun1 X0 X1) \quad (7)$$

Assume the following.

$$\neg v1\_xboole\_0 k1\_numbers \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_xboole\_0 X2)\wedge(m1\_rfunct\_3 \\ & X2 X0 X1))\Rightarrow(\forall X3.(m2\_rfunct\_3 X3 X0 X1 X2)\Rightarrow((v1\_funct\_1 X3)\wedge \\ & (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0.\forall X1.m1\_rfunct\_3 (k3\_rfunct\_3 X0 X1) X0 X1 \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.((\neg v1\_xboole\_0 \\ & X0)\wedge((\neg v1\_xboole\_0 X1)\wedge(((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (k2\_zfmisc\_1 \\ & (k3\_rfunct\_3 X0 X1) (k3\_rfunct\_3 X0 X1)) (k3\_rfunct\_3 X0 X1))\wedge( \\ & m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k3\_rfunct\_3 \\ & X0 X1) (k3\_rfunct\_3 X0 X1)) (k3\_rfunct\_3 X0 X1))))))\wedge((m1\_subset\_1 \\ & X3 (k3\_rfunct\_3 X0 X1))\wedge(m1\_subset\_1 X4 (k3\_rfunct\_3 X0 X1))))))\Rightarrow \\ & (m2\_rfunct\_3 (k2\_lpspace1 X0 X1 X2 X3 X4) X0 X1 (k3\_rfunct\_3 X0 X1)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.(\neg v1\_xboole\_0 X0)\Rightarrow(((v1\_funct\_1 (k13\_rfunct\_3 X0))\wedge \\ & ((v1\_funct\_2 (k13\_rfunct\_3 X0) (k2\_zfmisc\_1 (k3\_rfunct\_3 X0 k1\_numbers) \\ & (k3\_rfunct\_3 X0 k1\_numbers)) (k3\_rfunct\_3 X0 k1\_numbers))\wedge(m1\_subset\_1 \\ & (k13\_rfunct\_3 X0) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (k3\_rfunct\_3 \\ & X0 k1\_numbers) (k3\_rfunct\_3 X0 k1\_numbers)) (k3\_rfunct\_3 X0 k1\_numbers)))))) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 \\
& X0 X0) X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X0) X0)))) \Rightarrow ((v2\_binop\_1 X1 X0) \Leftrightarrow (\forall X2. (m1\_subset\_1 X2 \\
& X0) \Rightarrow (\forall X3. (m1\_subset\_1 X3 X0) \Rightarrow (\forall X4. (m1\_subset\_1 \\
& X4 X0) \Rightarrow (k3\_binop\_1 X0 X1 X2 (k3\_binop\_1 X0 X1 X3 X4) = k3\_binop\_1 X0 \\
& X1 (k3\_binop\_1 X0 X1 X2 X3) X4))))))
\end{aligned} \tag{13}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0. (\neg v1\_xboole\_0 X0) \Rightarrow (\forall X1. (m2\_rfunct\_3 X1 X0 k1\_numbers \\
& (k3\_rfunct\_3 X0 k1\_numbers)) \Rightarrow (\forall X2. (m2\_rfunct\_3 X2 X0 k1\_numbers \\
& (k3\_rfunct\_3 X0 k1\_numbers)) \Rightarrow (\forall X3. (m2\_rfunct\_3 X3 X0 k1\_numbers \\
& (k3\_rfunct\_3 X0 k1\_numbers)) \Rightarrow (r2\_relset\_1 X0 k1\_numbers (k2\_lpspace1 \\
& X0 k1\_numbers (k13\_rfunct\_3 X0) X1 (k2\_lpspace1 X0 k1\_numbers ( \\
& k13\_rfunct\_3 X0) X2 X3)) (k2\_lpspace1 X0 k1\_numbers (k13\_rfunct\_3 \\
& X0) (k2\_lpspace1 X0 k1\_numbers (k13\_rfunct\_3 X0) X1 X2) X3))))))
\end{aligned}$$