

t5\_lopban\_2 (TMH-  
bxW8ehE7HMDpRpm2NtzUDdMvytxe3dgE)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v5\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v6\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v7\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v8\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v4\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $v2\_normsp\_1 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_1 : \iota \Rightarrow o$  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  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v13\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_lopban\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_lopban\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  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  $r2\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_lopban\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_relat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $l1\_normsp\_0 : \iota \Rightarrow o$  be given. Let  $l1\_rlvect\_1 : \iota \Rightarrow o$  be given. Assume the

following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v5\_rlvect\_1 X0) \wedge \\
& ((v6\_rlvect\_1 X0) \wedge ((v7\_rlvect\_1 X0) \wedge ((v8\_rlvect\_1 X0) \wedge ((v3\_normsp\_0 \\
& X0) \wedge ((v4\_normsp\_0 X0) \wedge ((v2\_normsp\_1 X0) \wedge (l1\_normsp\_1 X0)))))))))) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X0)) \wedge ((v13\_vectsp\_1 X1 X0 X0) \wedge ((v1\_lopban\_1 X1 X0 \\
& X0) \wedge ((v2\_lopban\_1 X1 X0 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))))))) \Rightarrow (\forall X2.((v1\_funct\_1 \\
& X2) \wedge ((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \wedge ((v13\_vectsp\_1 \\
& X2 X0 X0) \wedge ((v1\_lopban\_1 X2 X0 X0) \wedge ((v2\_lopban\_1 X2 X0 X0) \wedge (m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))))))) \Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X0)) \wedge ((v13\_vectsp\_1 X3 X0 X0) \wedge ((v1\_lopban\_1 X3 X0 \\
& X0) \wedge ((v2\_lopban\_1 X3 X0 X0) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))))))) \Rightarrow ((r2\_funct\_2 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0) X3 (k1\_lopban\_2 X0 X2 X1)) \Leftrightarrow (\forall X4.(m1\_subset\_1 \\
& X4 (u1\_struct\_0 X0)) \Rightarrow (k3\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X0) X3 X4 = k3\_funct\_2 (u1\_struct\_0 X0) (u1\_struct\_0 X0) X1 (k3\_funct\_2 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0) X2 X4))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge \\
& ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\
& X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow ((r2\_funct\_2 X0 X1 X2 \\
& X3) \Rightarrow (r2\_funct\_2 X0 X1 X3 X2))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((v1\_funct\_1 X2) \wedge \\
& ((v1\_funct\_2 X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& X0 X1)))))) \wedge ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 X0 X1) \wedge (m1\_subset\_1 \\
& X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 X0 X1)))))) \Rightarrow (r2\_funct\_2 X0 X1 X2 X2)
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 \\
& X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge \\
& ((v5\_rlvect\_1 X0) \wedge (v6\_rlvect\_1 X0) \wedge (v7\_rlvect\_1 X0) \wedge (v8\_rlvect\_1 \\
& X0) \wedge (v3\_normsp\_0 X0) \wedge (v4\_normsp\_0 X0) \wedge (v2\_normsp\_1 X0) \wedge \\
& (l1\_normsp\_1 X0)))))) \wedge ((v1\_funct\_1 X1) \wedge (v1\_funct\_2 \\
& X1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \wedge (v13\_vectsp\_1 X1 X0 X0) \wedge \\
& ((v1\_lopban\_1 X1 X0 X0) \wedge (v2\_lopban\_1 X1 X0 X0) \wedge (m1\_subset\_1 X1 \\
& (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)))))) \wedge \\
& ((v1\_funct\_1 X2) \wedge (v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X0)) \wedge (v13\_vectsp\_1 X2 X0 X0) \wedge (v1\_lopban\_1 X2 X0 X0) \wedge (v2\_lopban\_1 \\
& X2 X0 X0) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)))))) \Rightarrow (k1\_lopban\_2 X0 X1 X2 = k3\_relat\_1 \\
& X1 X2)
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0. \forall X1. v1\_relat\_1 (k2\_zfmisc\_1 X0 X1) \tag{5}$$

Assume the following.

$$\forall X0. ((\neg v2\_struct\_0 X0) \wedge (l1\_struct\_0 X0)) \Rightarrow (\neg v1\_xboole\_0 \\
(u1\_struct\_0 X0)) \tag{6}$$

Assume the following.

$$\forall X0. \forall X1. (((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \wedge (( \\
v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1))) \Rightarrow ((v1\_relat\_1 (k3\_relat\_1 X0 \\
X1)) \wedge (v1\_funct\_1 (k3\_relat\_1 X0 X1))) \tag{7}$$

Assume the following.

$$\forall X0. (l2\_struct\_0 X0) \Rightarrow (l1\_struct\_0 X0) \tag{8}$$

Assume the following.

$$\forall X0. (l2\_normsp\_0 X0) \Rightarrow ((l1\_normsp\_0 X0) \wedge (l2\_struct\_0 X0)) \tag{9}$$

Assume the following.

$$\forall X0. (l1\_normsp\_1 X0) \Rightarrow ((l1\_rlvect\_1 X0) \wedge (l2\_normsp\_0 X0)) \tag{10}$$

Assume the following.

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

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge((v13\_algstr\_0 \\
& X0)\wedge((v2\_rlvect\_1 X0)\wedge((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 X0)\wedge \\
& ((v5\_rlvect\_1 X0)\wedge((v6\_rlvect\_1 X0)\wedge((v7\_rlvect\_1 X0)\wedge((v8\_rlvect\_1 \\
& X0)\wedge((v3\_normsp\_0 X0)\wedge((v4\_normsp\_0 X0)\wedge((v2\_normsp\_1 X0)\wedge \\
& (l1\_normsp\_1 X0))))))))))\wedge(((v1\_funct\_1 X1)\wedge((v1\_funct\_2 \\
& X1 (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge((v13\_vectsp\_1 X1 X0 X0)\wedge \\
& ((v1\_lopban\_1 X1 X0 X0)\wedge((v2\_lopban\_1 X1 X0 X0)\wedge(m1\_subset\_1 X1 \\
& (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))))))\wedge \\
& ((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X0))\wedge((v13\_vectsp\_1 X2 X0 X0)\wedge((v1\_lopban\_1 X2 X0 X0)\wedge((v2\_lopban\_1 \\
& X2 X0 X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0))))))))))\Rightarrow((v1\_funct\_1 (k1\_lopban\_2 X0 \\
& X1 X2))\wedge((v1\_funct\_2 (k1\_lopban\_2 X0 X1 X2) (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X0))\wedge((v13\_vectsp\_1 (k1\_lopban\_2 X0 X1 X2) X0 X0)\wedge((v1\_lopban\_1 \\
& (k1\_lopban\_2 X0 X1 X2) X0 X0)\wedge((v2\_lopban\_1 (k1\_lopban\_2 X0 X1 X2) \\
& X0 X0)\wedge(m1\_subset\_1 (k1\_lopban\_2 X0 X1 X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))))))
\end{aligned} \tag{12}$$

Assume the following.

$$\forall X0.(v1\_relat\_1 X0)\Rightarrow(\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 X0))\Rightarrow(v1\_relat\_1 X1)) \tag{13}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((v13\_algstr\_0 X0)\wedge((v2\_rlvect\_1 \\
& X0)\wedge((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 X0)\wedge((v5\_rlvect\_1 X0)\wedge \\
& ((v6\_rlvect\_1 X0)\wedge((v7\_rlvect\_1 X0)\wedge((v8\_rlvect\_1 X0)\wedge((v3\_normsp\_0 \\
& X0)\wedge((v4\_normsp\_0 X0)\wedge((v2\_normsp\_1 X0)\wedge(l1\_normsp\_1 X0))))))))))\Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X0))\wedge((v13\_vectsp\_1 X1 X0 X0)\wedge((v1\_lopban\_1 X1 X0 \\
& X0)\wedge((v2\_lopban\_1 X1 X0 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))))))\Rightarrow(\forall X2.((v1\_funct\_1 \\
& X2)\wedge((v1\_funct\_2 X2 (u1\_struct\_0 X0) (u1\_struct\_0 X0))\wedge((v13\_vectsp\_1 \\
& X2 X0 X0)\wedge((v1\_lopban\_1 X2 X0 X0)\wedge((v2\_lopban\_1 X2 X0 X0)\wedge(m1\_subset\_1 \\
& X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))))))\Rightarrow \\
& (\forall X3.((v1\_funct\_1 X3)\wedge((v1\_funct\_2 X3 (u1\_struct\_0 X0) \\
& (u1\_struct\_0 X0))\wedge((v13\_vectsp\_1 X3 X0 X0)\wedge((v1\_lopban\_1 X3 X0 \\
& X0)\wedge((v2\_lopban\_1 X3 X0 X0)\wedge(m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0))))))))))\Rightarrow(r2\_funct\_2 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0) (k1\_lopban\_2 X0 (k1\_lopban\_2 X0 X3 X2) X1) ( \\
& k1\_lopban\_2 X0 X3 (k1\_lopban\_2 X0 X2 X1))))))
\end{aligned}$$