t38_lopban_4 (TM-SWJ7wCpQMGfLWkVBp3HGwUo1Aiosd6Gtj)

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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 $v2\_funcsdom : \iota \Rightarrow o$ be given. Let $v3\_group\_1 : \iota \Rightarrow o$ be given. Let $v1\_vectsp\_1 : \iota \Rightarrow o$ be given. Let $v3\_vectsp\_1 : \iota \Rightarrow o$ be given. Let $v5\_lopban\_2 : \iota \Rightarrow o$ be given. Let $l1\_lopban\_2 : \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k10\_lopban\_4 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $l2\_algstr\_0 : \iota \Rightarrow o$ be given. Let $k1\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $v1\_xcmplx\_0 : \iota \Rightarrow o$ be given. Let $k3\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $np\_\_1 : \iota$ be given. Let $k1\_numbers : \iota$ be given. Let $k3\_rlvect\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_rlvect\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6\_numbers : \iota$ be given. Let $k1\_real\_1 : \iota \Rightarrow \iota$ be given. Let $k7\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8\_real\_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k5\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1\_normsp\_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k18\_complex1 : \iota \Rightarrow \iota$ be given. Let $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3\_lopban\_1 : \iota \Rightarrow o$ be given. Let $r1\_lopban\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2\_xxreal\_0 : \iota \Rightarrow o$ be given. Let $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5\_numbers : \iota$ be given. Let $v1\_xreal\_0 : \iota \Rightarrow o$ be given. Let $l1\_algstr\_0 : \iota \Rightarrow o$ be given. Let $k4\_xcmplx\_0 : \iota \Rightarrow \iota$ be given. Let $l6\_algstr\_0 : \iota \Rightarrow o$ be given. Let $l5\_algstr\_0 : \iota \Rightarrow o$ be given. Let $l4\_algstr\_0 : \iota \Rightarrow o$ be given. Let $l4\_struct\_0 : \iota \Rightarrow o$ be given. Let $l3\_struct\_0 : \iota \Rightarrow o$ be given. Let $l3\_algstr\_0 : \iota \Rightarrow o$ be given. Let $l2\_struct\_0 : \iota \Rightarrow o$ be given. Let $l1\_rlvect\_1 : \iota \Rightarrow o$ be given. Let $l1\_funcsdom : \iota \Rightarrow o$ be given. Let $l1\_normsp\_1 : \iota \Rightarrow o$ be given. Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge (l2\_algstr\_0\ X0))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow ((k1\_algstr\_0\ X0\ X1\ (k4\_algstr\_0\ X0\ X1) = k4\_struct\_0\ X0) \wedge (k1\_algstr\_0\ X0\ (k4\_algstr\_0\ X0\ X1)\ X1 = k4\_struct\_0\ X0))) \tag{1}$$

Assume the following.

$$\forall X0.(v1\_xcmplx\_0\ X0) \Rightarrow (k3\_xcmplx\_0\ np\_\_1\ X0 = X0) \tag{2}$$

Assume the following.

$$
\begin{gathered}
\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((v2\_funcsdom\ X0)\wedge \\
((v3\_group\_1\ X0)\wedge((v1\_vectsp\_1\ X0)\wedge((v3\_vectsp\_1\ X0)\wedge((v5\_lopban\_2 \\
X0)\wedge(l1\_lopban\_2\ X0))))))))))))))))))\Rightarrow(\forall X1.(m1\_subset\_1 \\
X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0 \\
X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4. \\
(m1\_subset\_1\ X4\ k1\_numbers)\Rightarrow(\forall X5.(m1\_subset\_1\ X5\ k1\_numbers)\Rightarrow \\
((k3\_rlvect\_1\ X0\ X1\ X2 = k3\_rlvect\_1\ X0\ X2\ X1)\wedge((k3\_rlvect\_1\ X0\ (\\
k3\_rlvect\_1\ X0\ X1\ X2)\ X3 = k3\_rlvect\_1\ X0\ X1\ (k3\_rlvect\_1\ X0\ X2\ X3))\wedge \\
((k3\_rlvect\_1\ X0\ X1\ (k4\_struct\_0\ X0) = X1)\wedge((\exists X6.(m1\_subset\_1 \\
X6\ (u1\_struct\_0\ X0))\wedge(k3\_rlvect\_1\ X0\ X1\ X6 = k4\_struct\_0\ X0))\wedge(\\
(k6\_algstr\_0\ X0\ (k6\_algstr\_0\ X0\ X1\ X2)\ X3 = k6\_algstr\_0\ X0\ X1\ (k6\_algstr\_0 \\
X0\ X2\ X3))\wedge((k1\_rlvect\_1\ X0\ X1\ np\_\_1 = X1)\wedge((k1\_rlvect\_1\ X0\ X1\ k6\_numbers = \\
k4\_struct\_0\ X0)\wedge((k1\_rlvect\_1\ X0\ (k4\_struct\_0\ X0)\ X4 = k4\_struct\_0 \\
X0)\wedge((k1\_rlvect\_1\ X0\ X1\ (k1\_real\_1\ np\_\_1) = k4\_algstr\_0\ X0\ X1)\wedge \\
((k6\_algstr\_0\ X0\ X1\ (k5\_struct\_0\ X0) = X1)\wedge((k6\_algstr\_0\ X0\ (k5\_struct\_0 \\
X0)\ X1 = X1)\wedge((k6\_algstr\_0\ X0\ X1\ (k3\_rlvect\_1\ X0\ X2\ X3) = k3\_rlvect\_1 \\
X0\ (k6\_algstr\_0\ X0\ X1\ X2)\ (k6\_algstr\_0\ X0\ X1\ X3))\wedge((k6\_algstr\_0 \\
X0\ (k3\_rlvect\_1\ X0\ X2\ X3)\ X1 = k3\_rlvect\_1\ X0\ (k6\_algstr\_0\ X0\ X2\ X1) \\
(k6\_algstr\_0\ X0\ X3\ X1))\wedge((k1\_rlvect\_1\ X0\ (k6\_algstr\_0\ X0\ X1\ X2) \\
X4 = k6\_algstr\_0\ X0\ (k1\_rlvect\_1\ X0\ X1\ X4)\ X2)\wedge((k1\_rlvect\_1\ X0\ (\\
k3\_rlvect\_1\ X0\ X1\ X2)\ X4 = k3\_rlvect\_1\ X0\ (k1\_rlvect\_1\ X0\ X1\ X4)\ (k1\_rlvect\_1 \\
X0\ X2\ X4))\wedge((k1\_rlvect\_1\ X0\ X1\ (k7\_real\_1\ X4\ X5) = k3\_rlvect\_1\ X0 \\
(k1\_rlvect\_1\ X0\ X1\ X4)\ (k1\_rlvect\_1\ X0\ X1\ X5))\wedge((k1\_rlvect\_1\ X0 \\
X1\ (k8\_real\_1\ X4\ X5) = k1\_rlvect\_1\ X0\ (k1\_rlvect\_1\ X0\ X1\ X5)\ X4)\wedge(\\
(k1\_rlvect\_1\ X0\ (k6\_algstr\_0\ X0\ X1\ X2)\ (k8\_real\_1\ X4\ X5) = k6\_algstr\_0 \\
X0\ (k1\_rlvect\_1\ X0\ X1\ X4)\ (k1\_rlvect\_1\ X0\ X2\ X5))\wedge((k1\_rlvect\_1 \\
X0\ (k6\_algstr\_0\ X0\ X1\ X2)\ X4 = k6\_algstr\_0\ X0\ X1\ (k1\_rlvect\_1\ X0\ X2 \\
X4))\wedge((k6\_algstr\_0\ X0\ (k4\_struct\_0\ X0)\ X1 = k4\_struct\_0\ X0)\wedge((\\
k6\_algstr\_0\ X0\ X1\ (k4\_struct\_0\ X0) = k4\_struct\_0\ X0)\wedge((k6\_algstr\_0 \\
X0\ X1\ (k5\_algstr\_0\ X0\ X2\ X3) = k5\_algstr\_0\ X0\ (k6\_algstr\_0\ X0\ X1\ X2) \\
(k6\_algstr\_0\ X0\ X1\ X3))\wedge((k6\_algstr\_0\ X0\ (k5\_algstr\_0\ X0\ X2\ X3) \\
X1 = k5\_algstr\_0\ X0\ (k6\_algstr\_0\ X0\ X2\ X1)\ (k6\_algstr\_0\ X0\ X3\ X1))\wedge \\
((k5\_algstr\_0\ X0\ (k3\_rlvect\_1\ X0\ X1\ X2)\ X3 = k3\_rlvect\_1\ X0\ X1\ (k5\_algstr\_0 \\
X0\ X2\ X3))\wedge((k3\_rlvect\_1\ X0\ (k5\_algstr\_0\ X0\ X1\ X2)\ X3 = k5\_algstr\_0 \\
X0\ X1\ (k5\_algstr\_0\ X0\ X2\ X3))\wedge((k5\_algstr\_0\ X0\ (k5\_algstr\_0\ X0\ X1 \\
X2)\ X3 = k5\_algstr\_0\ X0\ X1\ (k3\_rlvect\_1\ X0\ X2\ X3))\wedge((k3\_rlvect\_1 \\
X0\ X1\ X2 = k3\_rlvect\_1\ X0\ (k5\_algstr\_0\ X0\ X1\ X3)\ (k3\_rlvect\_1\ X0\ X3 \\
X2))\wedge((k5\_algstr\_0\ X0\ X1\ X2 = k3\_rlvect\_1\ X0\ (k5\_algstr\_0\ X0\ X1\ X3) \\
(k5\_algstr\_0\ X0\ X3\ X2))\wedge((X1 = k3\_rlvect\_1\ X0\ (k5\_algstr\_0\ X0\ X1 \\
X2)\ X2)\wedge((X1 = k5\_algstr\_0\ X0\ X2\ (k5\_algstr\_0\ X0\ X2\ X1))\wedge(((k1\_normsp\_0 \\
X0\ X1 = k6\_numbers)\Rightarrow(X1 = k4\_struct\_0\ X0))\wedge(((X1 = k4\_struct\_0\ X0)\Rightarrow \\
(k1\_normsp\_0\ X0\ X1 = k6\_numbers))\wedge((k1\_normsp\_0\ X0\ (k1\_rlvect\_1 \\
X0\ X1\ X4) = k8\_real\_1\ (k18\_complex1\ X4)\ (k1\_normsp\_0\ X0\ X1))\wedge((r1\_xxreal\_0 \\
(k1\_normsp\_0\ X0\ (k3\_rlvect\_1\ X0\ X1\ X2))\ (k7\_real\_1\ (k1\_normsp\_0 \\
X0\ X1)\ (k1\_normsp\_0\ X0\ X2)))\wedge((r1\_xxreal\_0\ (k1\_normsp\_0\ X0\ (k6\_algstr\_0 \\
X0\ X1\ X2))\ (k8\_real\_1\ (k1\_normsp\_0\ X0\ X1)\ (k1\_normsp\_0\ X0\ X2)))\wedge \\
((k1\_normsp\_0\ X0\ (k5\_struct\_0\ X0) = np\_\_1)\wedge(v3\_lopban\_1\ X0))
\end{gathered}
\tag{3}
$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v2\_rlvect\_1\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge((v5\_rlvect\_1\ X0)\wedge((v6\_rlvect\_1\ X0)\wedge((v7\_rlvect\_1\ X0)\wedge((v8\_rlvect\_1\ X0)\wedge((v3\_normsp\_0\ X0)\wedge((v4\_normsp\_0\ X0)\wedge((v2\_normsp\_1\ X0)\wedge((v2\_funcsdom\ X0)\wedge((v3\_group\_1\ X0)\wedge((v1\_vectsp\_1\ X0)\wedge((v3\_vectsp\_1\ X0)\wedge((v5\_lopban\_2\ X0)\wedge(l1\_lopban\_2\ X0))))))))))))))))\Rightarrow(k10\_lopban\_4\ X0\ (k4\_struct\_0\ X0) = k5\_struct\_0\ X0) \tag{4}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v2\_rlvect\_1\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge((v5\_rlvect\_1\ X0)\wedge((v6\_rlvect\_1\ X0)\wedge((v7\_rlvect\_1\ X0)\wedge((v8\_rlvect\_1\ X0)\wedge((v3\_normsp\_0\ X0)\wedge((v4\_normsp\_0\ X0)\wedge((v2\_normsp\_1\ X0)\wedge((v2\_funcsdom\ X0)\wedge((v3\_group\_1\ X0)\wedge((v1\_vectsp\_1\ X0)\wedge((v3\_vectsp\_1\ X0)\wedge((v5\_lopban\_2\ X0)\wedge(l1\_lopban\_2\ X0))))))))))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\Rightarrow((r1\_lopban\_4\ X0\ X1\ X2)\Rightarrow((k10\_lopban\_4\ X0\ (k3\_rlvect\_1\ X0\ X1\ X2) = k6\_algstr\_0\ X0\ (k10\_lopban\_4\ X0\ X1)\ (k10\_lopban\_4\ X0\ X2))\wedge((k10\_lopban\_4\ X0\ (k3\_rlvect\_1\ X0\ X2\ X1) = k6\_algstr\_0\ X0\ (k10\_lopban\_4\ X0\ X2)\ (k10\_lopban\_4\ X0\ X1))\wedge((k10\_lopban\_4\ X0\ (k3\_rlvect\_1\ X0\ X1\ X2) = k10\_lopban\_4\ X0\ (k3\_rlvect\_1\ X0\ X2\ X1))\wedge(r1\_lopban\_4\ X0\ (k10\_lopban\_4\ X0\ X1)\ (k10\_lopban\_4\ X0\ X2)))))))) \tag{5}$$

Assume the following.

$$((v2\_xxreal\_0\ np\_\_1)\wedge(m2\_subset\_1\ np\_\_1\ k1\_numbers\ k5\_numbers))\wedge((m1\_subset\_1\ np\_\_1\ k5\_numbers)\wedge(m1\_subset\_1\ np\_\_1\ k1\_numbers)) \tag{6}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k1\_numbers)\wedge(v1\_xreal\_0\ X1))\Rightarrow(k8\_real\_1\ X0\ X1 = k3\_xcmplx\_0\ X0\ X1) \tag{7}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v2\_rlvect\_1\ X0)\wedge(l1\_algstr\_0\ X0))\wedge((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))))\Rightarrow(k3\_rlvect\_1\ X0\ X1\ X2 = k1\_algstr\_0\ X0\ X1\ X2) \tag{8}$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k1\_numbers)\Rightarrow(k1\_real\_1\ X0 = k4\_xcmplx\_0\ X0) \tag{9}$$

Assume the following.

$$\forall X0.(v1\_xreal\_0\ X0)\Rightarrow((v1\_xcmplx\_0\ (k4\_xcmplx\_0\ X0))\wedge(v1\_xreal\_0\ (k4\_xcmplx\_0\ X0))) \tag{10}$$

Assume the following.

$$\forall X0.(l6\_algstr\_0\ X0) \Rightarrow ((l2\_algstr\_0\ X0) \wedge (l5\_algstr\_0\ X0)) \tag{11}$$

Assume the following.

$$\forall X0.(l5\_algstr\_0\ X0) \Rightarrow ((l4\_algstr\_0\ X0) \wedge (l4\_struct\_0\ X0)) \tag{12}$$

Assume the following.

$$\forall X0.(l4\_algstr\_0\ X0) \Rightarrow ((l3\_struct\_0\ X0) \wedge (l3\_algstr\_0\ X0)) \tag{13}$$

Assume the following.

$$\forall X0.(l2\_algstr\_0\ X0) \Rightarrow ((l2\_struct\_0\ X0) \wedge (l1\_algstr\_0\ X0)) \tag{14}$$

Assume the following.

$$\forall X0.(l1\_rlvect\_1\ X0) \Rightarrow (l2\_algstr\_0\ X0) \tag{15}$$

Assume the following.

$$\forall X0.(l1\_lopban\_2\ X0) \Rightarrow ((l1\_funcsdom\ X0) \wedge (l1\_normsp\_1\ X0)) \tag{16}$$

Assume the following.

$$\forall X0.(l1\_funcsdom\ X0) \Rightarrow ((l6\_algstr\_0\ X0) \wedge (l1\_rlvect\_1\ X0)) \tag{17}$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k1\_numbers) \wedge (v1\_xreal\_0\ X1)) \Rightarrow (m1\_subset\_1\ (k8\_real\_1\ X0\ X1)\ k1\_numbers) \tag{18}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0\ X0) \wedge (l1\_rlvect\_1\ X0)) \wedge ((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \wedge (v1\_xreal\_0\ X2))) \Rightarrow (m1\_subset\_1\ (k1\_rlvect\_1\ X0\ X1\ X2)\ (u1\_struct\_0\ X0)) \tag{19}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge (l3\_algstr\_0\ X0)) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (\forall X2.(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0)) \Rightarrow ((r1\_lopban\_4\ X0\ X1\ X2) \Leftrightarrow (k6\_algstr\_0\ X0\ X1\ X2 = k6\_algstr\_0\ X0\ X2\ X1)))) \tag{20}$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k1\_numbers) \Rightarrow (v1\_xreal\_0\ X0) \tag{21}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v2\_rlvect\_1\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge((v5\_rlvect\_1\ X0)\wedge((v6\_rlvect\_1\ X0)\wedge((v7\_rlvect\_1\ X0)\wedge((v8\_rlvect\_1\ X0)\wedge((v3\_normsp\_0\ X0)\wedge((v4\_normsp\_0\ X0)\wedge((v2\_normsp\_1\ X0)\wedge((v2\_funcsdom\ X0)\wedge((v3\_group\_1\ X0)\wedge((v1\_vectsp\_1\ X0)\wedge((v3\_vectsp\_1\ X0)\wedge((v5\_lopban\_2\ X0)\wedge(l1\_lopban\_2\ X0))))))))))))))))\Rightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow((k6\_algstr\_0\ X0\ (k10\_lopban\_4\ X0\ X1)\ (k10\_lopban\_4\ X0\ (k4\_algstr\_0\ X0\ X1))) = k5\_struct\_0\ X0)\wedge(k6\_algstr\_0\ X0\ (k10\_lopban\_4\ X0\ (k4\_algstr\_0\ X0\ X1))\ (k10\_lopban\_4\ X0\ X1) = k5\_struct\_0\ X0)))$$