

# l37\_vectsp\_5 (TMKbBETAZTrcyvByLPdidq- nav9NMYYYAugLM)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_vectsp\_1 : \iota \Rightarrow o$  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  $l6\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v8\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v9\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v10\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v11\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_vectsp\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k2\_vectsp\_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_vectsp\_5 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_xboole\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0. \forall X1. (r1\_tarski X0 X1) \Rightarrow (k3\_xboole\_0 X0 X1 = X0) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_group\_1 \\ & X0) \wedge ((v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge \\ & ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow \\ & (\forall X1. ((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v8\_vectsp\_1 \\ & X1 X0) \wedge ((v9\_vectsp\_1 X1 X0) \wedge ((v10\_vectsp\_1 X1 X0) \wedge ((v11\_vectsp\_1 \\ & X1 X0) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge \\ & (l1\_vectsp\_1 X1 X0)))))))))) \Rightarrow (\forall X2. (m1\_vectsp\_4 X2 X0 X1) \Rightarrow \\ & (\forall X3. (m1\_vectsp\_4 X3 X0 X1) \Rightarrow (r1\_tarski (u1\_struct\_0 X2) \\ & (u1\_struct\_0 (k1\_vectsp\_5 X0 X1 X2 X3)))))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\
& X0)\wedge((v13\_algstr\_0 X0)\wedge((v3\_group\_1 X0)\wedge((v4\_vectsp\_1 X0)\wedge \\
& ((v5\_vectsp\_1 X0)\wedge((v2\_rlvect\_1 X0)\wedge((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 \\
& X0)\wedge(l6\_algstr\_0 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge((v13\_algstr\_0 \\
& X1)\wedge((v8\_vectsp\_1 X1 X0)\wedge((v9\_vectsp\_1 X1 X0)\wedge((v10\_vectsp\_1 \\
& X1 X0)\wedge((v11\_vectsp\_1 X1 X0)\wedge((v2\_rlvect\_1 X1)\wedge((v3\_rlvect\_1 \\
& X1)\wedge((v4\_rlvect\_1 X1)\wedge(l1\_vectsp\_1 X1 X0))))))))\wedge((m1\_vectsp\_4 \\
& X2 X0 X1)\wedge(m1\_vectsp\_4 X3 X0 X1)))\Rightarrow((v7\_vectsp\_1 (k2\_vectsp\_5 \\
& X0 X1 X2 X3) X0)\wedge(m1\_vectsp\_4 (k2\_vectsp\_5 X0 X1 X2 X3) X0 X1))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0 \\
& X0)\wedge((v13\_algstr\_0 X0)\wedge((v3\_group\_1 X0)\wedge((v4\_vectsp\_1 X0)\wedge \\
& ((v5\_vectsp\_1 X0)\wedge((v2\_rlvect\_1 X0)\wedge((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 \\
& X0)\wedge(l6\_algstr\_0 X0))))))))\wedge(((\neg v2\_struct\_0 X1)\wedge((v13\_algstr\_0 \\
& X1)\wedge((v8\_vectsp\_1 X1 X0)\wedge((v9\_vectsp\_1 X1 X0)\wedge((v10\_vectsp\_1 \\
& X1 X0)\wedge((v11\_vectsp\_1 X1 X0)\wedge((v2\_rlvect\_1 X1)\wedge((v3\_rlvect\_1 \\
& X1)\wedge((v4\_rlvect\_1 X1)\wedge(l1\_vectsp\_1 X1 X0))))))))\wedge((m1\_vectsp\_4 \\
& X2 X0 X1)\wedge(m1\_vectsp\_4 X3 X0 X1)))\Rightarrow((v7\_vectsp\_1 (k1\_vectsp\_5 \\
& X0 X1 X2 X3) X0)\wedge(m1\_vectsp\_4 (k1\_vectsp\_5 X0 X1 X2 X3) X0 X1))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((v13\_algstr\_0 X0)\wedge((v3\_group\_1 \\
& X0)\wedge((v4\_vectsp\_1 X0)\wedge((v5\_vectsp\_1 X0)\wedge((v2\_rlvect\_1 X0)\wedge \\
& ((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 X0)\wedge(l6\_algstr\_0 X0))))))))\Rightarrow \\
& (\forall X1.((\neg v2\_struct\_0 X1)\wedge((v13\_algstr\_0 X1)\wedge((v8\_vectsp\_1 \\
& X1 X0)\wedge((v9\_vectsp\_1 X1 X0)\wedge((v10\_vectsp\_1 X1 X0)\wedge((v11\_vectsp\_1 \\
& X1 X0)\wedge((v2\_rlvect\_1 X1)\wedge((v3\_rlvect\_1 X1)\wedge((v4\_rlvect\_1 X1)\wedge \\
& (l1\_vectsp\_1 X1 X0))))))))\Rightarrow(\forall X2.(m1\_vectsp\_4 X2 X0 X1)\Rightarrow \\
& (\forall X3.(m1\_vectsp\_4 X3 X0 X1)\Rightarrow(\forall X4.((v7\_vectsp\_1 \\
& X4 X0)\wedge(m1\_vectsp\_4 X4 X0 X1))\Rightarrow((X4 = k2\_vectsp\_5 X0 X1 X2 X3)\Leftrightarrow(u1\_struct\_0 \\
& X4 = k3\_xboole\_0 (u1\_struct\_0 X2) (u1\_struct\_0 X3))))))
\end{aligned} \tag{5}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0)\wedge((v13\_algstr\_0 X0)\wedge((v3\_group\_1 \\
& X0)\wedge((v4\_vectsp\_1 X0)\wedge((v5\_vectsp\_1 X0)\wedge((v2\_rlvect\_1 X0)\wedge \\
& ((v3\_rlvect\_1 X0)\wedge((v4\_rlvect\_1 X0)\wedge(l6\_algstr\_0 X0))))))))\Rightarrow \\
& (\forall X1.((\neg v2\_struct\_0 X1)\wedge((v13\_algstr\_0 X1)\wedge((v8\_vectsp\_1 \\
& X1 X0)\wedge((v9\_vectsp\_1 X1 X0)\wedge((v10\_vectsp\_1 X1 X0)\wedge((v11\_vectsp\_1 \\
& X1 X0)\wedge((v2\_rlvect\_1 X1)\wedge((v3\_rlvect\_1 X1)\wedge((v4\_rlvect\_1 X1)\wedge \\
& (l1\_vectsp\_1 X1 X0))))))))\Rightarrow(\forall X2.(m1\_vectsp\_4 X2 X0 X1)\Rightarrow \\
& (\forall X3.(m1\_vectsp\_4 X3 X0 X1)\Rightarrow(u1\_struct\_0 (k2\_vectsp\_5 \\
& X0 X1 X2 (k1\_vectsp\_5 X0 X1 X2 X3)) = u1\_struct\_0 X2)))
\end{aligned}$$