

# t65\_hermitan (TMQhwZXMFx- HtKxSXWUEh8Gz6ubZamCURozi)

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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  $v8\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_complfld : \iota$  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  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v4\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_hermitan : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v5\_hermitan : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_vectsp10 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k13\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_vectsp\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_hermitan : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k14\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_hermitan : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_hermitan : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k7\_hermitan : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v8\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v9\_vectsp\_1 X0 k1\_complfld) \wedge ((v10\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v11\_vectsp\_1 X0 k1\_complfld) \wedge (l1\_vectsp\_1 X0 k1\_complfld)))))))))) \Rightarrow \\
& (\forall X1. ((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld) \wedge ((v2\_bilinear \\
& X1 k1\_complfld X0 X0) \wedge ((v4\_bilinear X1 k1\_complfld X0 X0) \wedge ((v3\_hermitan \\
& X1 X0) \wedge ((v5\_hermitan X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 \\
& k1\_complfld)))))))))) \Rightarrow (k13\_bilinear k1\_complfld X0 X0 X1 = k14\_bilinear \\
& k1\_complfld X0 X0 (k3\_hermitan X0 X0 X1)))
\end{aligned} \tag{1}$$

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 \\
& ((v8\_vectsp\_1 X0 k1\_complfld) \wedge ((v9\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v10\_vectsp\_1 X0 k1\_complfld) \wedge ((v11\_vectsp\_1 X0 k1\_complfld) \wedge \\
& (l1\_vectsp\_1 X0 k1\_complfld)))))))))) \wedge (((\neg v2\_struct\_0 X1) \wedge \\
& ((v13\_algstr\_0 X1) \wedge ((v2\_rlvect\_1 X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 \\
& X1) \wedge ((v8\_vectsp\_1 X1 k1\_complfld) \wedge ((v9\_vectsp\_1 X1 k1\_complfld) \wedge \\
& ((v10\_vectsp\_1 X1 k1\_complfld) \wedge ((v11\_vectsp\_1 X1 k1\_complfld) \wedge \\
& (l1\_vectsp\_1 X1 k1\_complfld)))))))))) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 \\
& X2 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1)) (u1\_struct\_0 \\
& k1\_complfld) \wedge ((v1\_bilinear X2 k1\_complfld X0 X1) \wedge ((v2\_bilinear \\
& X2 k1\_complfld X0 X1) \wedge ((v4\_bilinear X2 k1\_complfld X0 X1) \wedge ((v2\_hermitan \\
& X2 X0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X1)) (u1\_struct\_0 k1\_complfld)))))))))) \Rightarrow \\
& ((v1\_funct\_1 (k7\_hermitan X0 X1 X2)) \wedge ((v1\_funct\_2 (k7\_hermitan \\
& X0 X1 X2) (k2\_zfmisc\_1 (u1\_struct\_0 (k6\_vectsp10 k1\_complfld X0 \\
& (k13\_bilinear k1\_complfld X0 X1 X2))) (u1\_struct\_0 (k6\_vectsp10 \\
& k1\_complfld X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan X0 \\
& X1 X2)))) (u1\_struct\_0 k1\_complfld) \wedge ((v1\_bilinear (k7\_hermitan \\
& X0 X1 X2) k1\_complfld (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear \\
& k1\_complfld X0 X1 X2)) (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge ((v2\_bilinear (k7\_hermitan \\
& X0 X1 X2) k1\_complfld (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear \\
& k1\_complfld X0 X1 X2)) (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge ((v4\_bilinear (k7\_hermitan \\
& X0 X1 X2) k1\_complfld (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear \\
& k1\_complfld X0 X1 X2)) (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge ((v2\_hermitan (k7\_hermitan \\
& X0 X1 X2) (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld \\
& X0 X1 X2)) (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear k1\_complfld \\
& X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge (m1\_subset\_1 (k7\_hermitan X0 X1 \\
& X2) (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 (k6\_vectsp10 \\
& k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X1 X2))) (u1\_struct\_0 \\
& (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan \\
& X0 X1 X2)))) (u1\_struct\_0 k1\_complfld))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v8\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v9\_vectsp\_1 X0 k1\_complfld) \wedge ((v10\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v11\_vectsp\_1 X0 k1\_complfld) \wedge (l1\_vectsp\_1 X0 k1\_complfld)))))))))) \Rightarrow \\
& (\forall X1.((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)) \wedge ((v2\_bilinear \\
& X1 k1\_complfld X0 X0) \wedge ((v4\_bilinear X1 k1\_complfld X0 X0) \wedge ((v3\_hermitan \\
& X1 X0) \wedge ((v5\_hermitan X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 \\
& k1\_complfld)))))))))) \Rightarrow (k8\_hermitan X0 X1 = k7\_hermitan X0 X0 X1)) \\
& \tag{3}
\end{aligned}$$

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 ((v8\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v9\_vectsp\_1 X0 k1\_complfld) \wedge ((v10\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v11\_vectsp\_1 X0 k1\_complfld) \wedge (l1\_vectsp\_1 X0 k1\_complfld)))))))))) \Rightarrow \\
& (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v2\_rlvect\_1 \\
& X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge ((v8\_vectsp\_1 X1 k1\_complfld) \wedge \\
& ((v9\_vectsp\_1 X1 k1\_complfld) \wedge ((v10\_vectsp\_1 X1 k1\_complfld) \wedge \\
& ((v11\_vectsp\_1 X1 k1\_complfld) \wedge (l1\_vectsp\_1 X1 k1\_complfld)))))))))) \Rightarrow \\
& (\forall X2.((v1\_funct\_1 X2) \wedge ((v1\_funct\_2 X2 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X1)) (u1\_struct\_0 k1\_complfld)) \wedge ((v1\_bilinear \\
& X2 k1\_complfld X0 X1) \wedge ((v2\_bilinear X2 k1\_complfld X0 X1) \wedge ((v4\_bilinear \\
& X2 k1\_complfld X0 X1) \wedge ((v2\_hermitan X2 X0 X1) \wedge (m1\_subset\_1 X2 ( \\
& k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 \\
& X1)) (u1\_struct\_0 k1\_complfld)))))))))) \Rightarrow (\forall X3.((v1\_funct\_1 \\
& X3) \wedge ((v1\_funct\_2 X3 (k2\_zfmisc\_1 (u1\_struct\_0 (k6\_vectsp10 k1\_complfld \\
& X0 (k13\_bilinear k1\_complfld X0 X1 X2))) (u1\_struct\_0 (k6\_vectsp10 \\
& k1\_complfld X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan X0 \\
& X1 X2)))))) (u1\_struct\_0 k1\_complfld) \wedge ((v1\_bilinear X3 k1\_complfld \\
& (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X1 X2)) \\
& (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan \\
& X0 X1 X2)))) \wedge ((v2\_bilinear X3 k1\_complfld (k6\_vectsp10 k1\_complfld \\
& X0 (k13\_bilinear k1\_complfld X0 X1 X2)) (k6\_vectsp10 k1\_complfld \\
& X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge (( \\
& v4\_bilinear X3 k1\_complfld (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear \\
& k1\_complfld X0 X1 X2)) (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \wedge ((v2\_hermitan X3 (k6\_vectsp10 \\
& k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X1 X2)) (k6\_vectsp10 \\
& k1\_complfld X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan X0 \\
& X1 X2)))) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld \\
& X0 X1 X2))) (u1\_struct\_0 (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))))) (u1\_struct\_0 k1\_complfld)))))) \Rightarrow \\
& ((X3 = k7\_hermitan X0 X1 X2) \Leftrightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X1 X2)))) \Rightarrow \\
& (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 (k6\_vectsp10 k1\_complfld \\
& X1 (k14\_bilinear k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))))) \Rightarrow ( \\
& \forall X6.(m1\_subset\_1 X6 (u1\_struct\_0 X0) \Rightarrow (\forall X7.(m1\_subset\_1 \\
& X7 (u1\_struct\_0 X1) \Rightarrow (((X4 = k3\_vectsp\_4 k1\_complfld X0 X6 (k13\_bilinear \\
& k1\_complfld X0 X1 X2)) \wedge (X5 = k3\_vectsp\_4 k1\_complfld X1 X7 (k14\_bilinear \\
& k1\_complfld X0 X1 (k3\_hermitan X0 X1 X2)))) \Rightarrow (k2\_binop\_1 (u1\_struct\_0 \\
& (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X1 X2))) \\
& (u1\_struct\_0 (k6\_vectsp10 k1\_complfld X1 (k14\_bilinear k1\_complfld \\
& X0 X1 (k3\_hermitan X0 X1 X2)))) (u1\_struct\_0 k1\_complfld) X3 X4 X5 = \\
& k2\_binop\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X1) (u1\_struct\_0 k1\_complfld) \\
& X2 X6 X7))))))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_vectsp\_1 X0 k1\_complfld)) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)))) \Rightarrow \\
& (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)) \wedge ((v4\_bilinear \\
& X1 k1\_complfld X0 X0) \wedge (v3\_hermitan X1 X0)))) \Rightarrow ((v1\_funct\_1 X1) \wedge \\
& ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \\
& (u1\_struct\_0 k1\_complfld)) \wedge (v2\_hermitan X1 X0 X0))))))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l1\_vectsp\_1 X0 k1\_complfld)) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)))) \Rightarrow \\
& (((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)) \wedge ((v2\_bilinear \\
& X1 k1\_complfld X0 X0) \wedge (v3\_hermitan X1 X0)))) \Rightarrow ((v1\_funct\_1 X1) \wedge \\
& ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) \\
& (u1\_struct\_0 k1\_complfld)) \wedge (v1\_bilinear X1 k1\_complfld X0 X0))))))
\end{aligned} \tag{6}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v2\_rlvect\_1 \\
& X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v8\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v9\_vectsp\_1 X0 k1\_complfld) \wedge ((v10\_vectsp\_1 X0 k1\_complfld) \wedge \\
& ((v11\_vectsp\_1 X0 k1\_complfld) \wedge (l1\_vectsp\_1 X0 k1\_complfld)))))))) \Rightarrow \\
& (\forall X1.(((v1\_funct\_1 X1) \wedge ((v1\_funct\_2 X1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0)) (u1\_struct\_0 k1\_complfld)) \wedge ((v2\_bilinear \\
& X1 k1\_complfld X0 X0) \wedge ((v4\_bilinear X1 k1\_complfld X0 X0) \wedge ((v3\_hermitan \\
& X1 X0) \wedge ((v5\_hermitan X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X0) (u1\_struct\_0 X0)) (u1\_struct\_0 \\
& k1\_complfld)))))))))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\
& (k6\_vectsp10 k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X0 X1)))) \Rightarrow \\
& (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 (k6\_vectsp10 k1\_complfld \\
& X0 (k13\_bilinear k1\_complfld X0 X0 X1)))) \Rightarrow (\forall X4.(m1\_subset\_1 \\
& X4 (u1\_struct\_0 X0)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 \\
& X0)) \Rightarrow (((X2 = k3\_vectsp\_4 k1\_complfld X0 X4 (k13\_bilinear k1\_complfld \\
& X0 X0 X1)) \wedge (X3 = k3\_vectsp\_4 k1\_complfld X0 X5 (k13\_bilinear k1\_complfld \\
& X0 X0 X1))) \Rightarrow (k2\_binop\_1 (u1\_struct\_0 (k6\_vectsp10 k1\_complfld \\
& X0 (k13\_bilinear k1\_complfld X0 X0 X1)) (u1\_struct\_0 (k6\_vectsp10 \\
& k1\_complfld X0 (k13\_bilinear k1\_complfld X0 X0 X1)) (u1\_struct\_0 \\
& k1\_complfld) (k8\_hermitan X0 X1) X2 X3 = k2\_binop\_1 (u1\_struct\_0 \\
& X0) (u1\_struct\_0 X0) (u1\_struct\_0 k1\_complfld) X1 X4 X5))))))
\end{aligned}$$