

t46_hermitan
(TMTN3rHFX2AZXQarnRU4NjPDHJ1yUxokApQ)

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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 $r1_xxreal_0 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k5_square_1 : \iota \Rightarrow \iota$ be given. Let $k17_complex1 : \iota \Rightarrow \iota$ be given. Let $k2_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k8_real_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_xcmplx_0 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_hermitan : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v4_hermitan : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k3_complex1 : \iota \Rightarrow \iota$ be given. Let $v1_xcmplx_0 : \iota \Rightarrow o$ be given. Let $np_1 : \iota$ 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 $k1_numbers : \iota$ be given. Let $k5_numbers : \iota$ be given. Let $v1_xreal_0 : \iota \Rightarrow o$ be

given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v2_rlvect_1 \\
& X0) \wedge ((v3_rlvect_1 X0) \wedge ((v4_rlvect_1 X0) \wedge ((v8_vectsp_1 X0 k1_complfld) \wedge \\
& ((v9_vectsp_1 X0 k1_complfld) \wedge ((v10_vectsp_1 X0 k1_complfld) \wedge \\
& ((v11_vectsp_1 X0 k1_complfld) \wedge (l1_vectsp_1 X0 k1_complfld)))))))))) \Rightarrow \\
& (\forall X1.(m1_subset_1 X1 (u1_struct_0 X0)) \Rightarrow (\forall X2.(m1_subset_1 \\
& X2 (u1_struct_0 X0)) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\
& k1_complfld) \wedge ((v2_bilinear X3 k1_complfld X0 X0) \wedge ((v4_bilinear \\
& X3 k1_complfld X0 X0) \wedge ((v3_hermitan X3 X0) \wedge ((v5_hermitan X3 X0) \wedge \\
& (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
& X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld)))))))))) \Rightarrow (r1_xxreal_0 \\
& (k5_square_1 (k17_complex1 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0) (u1_struct_0 k1_complfld) X3 X1 X2))) (k3_xcmplx_0 (k4_hermitan \\
& X0 X3 X1) (k4_hermitan X0 X3 X2))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge ((v13_algstr_0 X0) \wedge ((v3_rlvect_1 \\
& X0) \wedge ((v4_rlvect_1 X0) \wedge ((v8_vectsp_1 X0 k1_complfld) \wedge ((v9_vectsp_1 \\
& X0 k1_complfld) \wedge ((v10_vectsp_1 X0 k1_complfld) \wedge ((v11_vectsp_1 \\
& X0 k1_complfld) \wedge (l1_vectsp_1 X0 k1_complfld)))))))))) \Rightarrow (\forall X1. \\
& ((v1_funct_1 X1) \wedge ((v1_funct_2 X1 (k2_zfmisc_1 (u1_struct_0 X0) \\
& (u1_struct_0 X0)) (u1_struct_0 k1_complfld)) \wedge ((v4_hermitan \\
& X1 X0) \wedge ((v5_hermitan X1 X0) \wedge (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\
& k1_complfld)))))))))) \Rightarrow (\forall X2.(m1_subset_1 X2 (u1_struct_0 \\
& X0)) \Rightarrow ((k17_complex1 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\
& X0) (u1_struct_0 k1_complfld) X1 X2 X2) = k3_complex1 (k2_binop_1 \\
& (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 k1_complfld) X1 \\
& X2 X2)) \wedge (k4_hermitan X0 X1 X2 = k17_complex1 (k2_binop_1 (u1_struct_0 \\
& X0) (u1_struct_0 X0) (u1_struct_0 k1_complfld) X1 X2 X2))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(v1_xcmplx_0 X0) \Rightarrow (k3_xcmplx_0 np_1 X0 = X0) \tag{3}$$

Assume the following.

$$\begin{aligned}
& ((v2_xxreal_0 np_1) \wedge (m2_subset_1 np_1 k1_numbers k5_numbers)) \wedge \\
& ((m1_subset_1 np_1 k5_numbers) \wedge (m1_subset_1 np_1 k1_numbers))
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0. \forall X1. ((m1_subset_1 X0 k1_numbers) \wedge (v1_xxreal_0 X1)) \Rightarrow (k8_real_1 X0 X1 = k3_xcmplx_0 X0 X1) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.((m1_subset_1 X0 k1_numbers)\wedge(v1_xreal_0 X1))\Rightarrow(m1_subset_1 (k8_real_1 X0 X1) k1_numbers) \quad (6)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v2_struct_0 X0)\wedge(l1_vectsp_1 \\ & X0 k1_complfld))\wedge(((v1_funct_1 X1)\wedge((v1_funct_2 X1 (k2_zfmisc_1 \\ & (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))\wedge \\ & (m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))))))\wedge(m1_subset_1 \\ & X2 (u1_struct_0 X0))))\Rightarrow(v1_xreal_0 (k4_hermitan X0 X1 X2)) \end{aligned} \quad (7)$$

Assume the following.

$$\forall X0.(v1_xreal_0 X0)\Rightarrow(v1_xcmplx_0 X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge(l1_vectsp_1 X0 k1_complfld))\Rightarrow \\ & (\forall X1.(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))))\Rightarrow \\ & (((v1_funct_1 X1)\wedge((v1_funct_2 X1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))\wedge(v3_hermitan \\ & X1 X0)))\Rightarrow((v1_funct_1 X1)\wedge((v1_funct_2 X1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))\wedge(v4_hermitan \\ & X1 X0)))))) \end{aligned} \quad (9)$$

Theorem 1

$$\begin{aligned} & \forall X0.((\neg v2_struct_0 X0)\wedge((v13_algstr_0 X0)\wedge((v2_rlvect_1 \\ & X0)\wedge((v3_rlvect_1 X0)\wedge((v4_rlvect_1 X0)\wedge((v8_vectsp_1 X0 k1_complfld)\wedge \\ & ((v9_vectsp_1 X0 k1_complfld)\wedge((v10_vectsp_1 X0 k1_complfld)\wedge \\ & ((v11_vectsp_1 X0 k1_complfld)\wedge(l1_vectsp_1 X0 k1_complfld))))))))))\Rightarrow \\ & (\forall X1.((v1_funct_1 X1)\wedge((v1_funct_2 X1 (k2_zfmisc_1 (u1_struct_0 \\ & X0) (u1_struct_0 X0)) (u1_struct_0 k1_complfld))\wedge((v2_bilinear \\ & X1 k1_complfld X0 X0)\wedge((v4_bilinear X1 k1_complfld X0 X0)\wedge((v3_hermitan \\ & X1 X0)\wedge((v5_hermitan X1 X0)\wedge(m1_subset_1 X1 (k1_zfmisc_1 (k2_zfmisc_1 \\ & (k2_zfmisc_1 (u1_struct_0 X0) (u1_struct_0 X0)) (u1_struct_0 \\ & k1_complfld))))))))))\Rightarrow(\forall X2.(m1_subset_1 X2 (u1_struct_0 \\ & X0))\Rightarrow(\forall X3.(m1_subset_1 X3 (u1_struct_0 X0))\Rightarrow(r1_xxreal_0 \\ & (k5_square_1 (k17_complex1 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\ & X0) (u1_struct_0 k1_complfld) X1 X2 X3))) (k8_real_1 (k17_complex1 \\ & (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 X0) (u1_struct_0 k1_complfld) \\ & X1 X2 X2)) (k17_complex1 (k2_binop_1 (u1_struct_0 X0) (u1_struct_0 \\ & X0) (u1_struct_0 k1_complfld) X1 X3 X3)))))) \end{aligned}$$