

t38_bilinear
(TMHwtjkXSY2Loa1S6tnn9r5uqyBu7fK53GY)

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Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $v13_algstr_0 : \iota \Rightarrow o$ be given. Let $v3_rlvect_1 : \iota \Rightarrow o$ be given. Let $v4_rlvect_1 : \iota \Rightarrow o$ 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 $l6_algstr_0 : \iota \Rightarrow o$ 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 $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $u1_struct_0 : \iota \Rightarrow \iota$ 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 $v1_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v2_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v3_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k1_algstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4_vectsp_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_algstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l3_algstr_0 : \iota \Rightarrow o$ be given. Let $l2_algstr_0 : \iota \Rightarrow o$ 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 $l2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_algstr_0 : \iota \Rightarrow o$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l3_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X2)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.((v1_funct_1 X6) \wedge \\
& ((v1_funct_2 X6 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)) \wedge (m1_subset_1 X6 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)))))) \Rightarrow ((v3_bilinear X6 X0 X1 X2) \Rightarrow (k2_binop_1 (u1_struct_0 \\
& X1) (u1_struct_0 X2) (u1_struct_0 X0) X6 X3 (k4_vectsp_1 X0 X2 X5 \\
& X4) = k6_algstr_0 X0 X5 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X6 X3 X4))))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l3_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X2)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X0)) \Rightarrow (\forall X6.((v1_funct_1 X6) \wedge \\
& ((v1_funct_2 X6 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)) \wedge (m1_subset_1 X6 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)))))) \Rightarrow ((v4_bilinear X6 X0 X1 X2) \Rightarrow (k2_binop_1 (u1_struct_0 \\
& X1) (u1_struct_0 X2) (u1_struct_0 X0) X6 (k4_vectsp_1 X0 X1 X5 X3) \\
& X4 = k6_algstr_0 X0 X5 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X6 X3 X4))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X2)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X2)) \Rightarrow (\forall X6.((v1_funct_1 X6) \wedge \\
& ((v1_funct_2 X6 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)) \wedge (m1_subset_1 X6 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)))))) \Rightarrow ((v1_bilinear X6 X0 X1 X2) \Rightarrow (k2_binop_1 (u1_struct_0 \\
& X1) (u1_struct_0 X2) (u1_struct_0 X0) X6 X3 (k1_algstr_0 X2 X4 X5) = \\
& k1_algstr_0 X0 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 X2) (\\
& u1_struct_0 X0) X6 X3 X4) (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X6 X3 X5))))))))))
\end{aligned} \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l2_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.(m1_subset_1 X3 (u1_struct_0 \\
& X1)) \Rightarrow (\forall X4.(m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X2)) \Rightarrow (\forall X6.((v1_funct_1 X6) \wedge \\
& ((v1_funct_2 X6 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)) \wedge (m1_subset_1 X6 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)))))) \Rightarrow ((v2_bilinear X6 X0 X1 X2) \Rightarrow (k2_binop_1 (u1_struct_0 \\
& X1) (u1_struct_0 X2) (u1_struct_0 X0) X6 (k1_algstr_0 X1 X3 X4) X5 = \\
& k1_algstr_0 X0 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 X2) (\\
& u1_struct_0 X0) X6 X3 X5) (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X6 X4 X5))))))))))
\end{aligned} \tag{4}$$

Assume the following.

$$\forall X0.(l6_algstr_0 X0) \Rightarrow ((l2_algstr_0 X0) \wedge (l5_algstr_0 X0)) \quad (5)$$

Assume the following.

$$\forall X0.(l5_algstr_0 X0) \Rightarrow ((l4_algstr_0 X0) \wedge (l4_struct_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l4_algstr_0 X0) \Rightarrow ((l3_struct_0 X0) \wedge (l3_algstr_0 X0)) \quad (7)$$

Assume the following.

$$\forall X0.(l2_algstr_0 X0) \Rightarrow ((l2_struct_0 X0) \wedge (l1_algstr_0 X0)) \quad (8)$$

Assume the following.

$$\forall X0.(l1_struct_0 X0) \Rightarrow (\forall X1.(l1_vectsp_1 X1 X0) \Rightarrow (l2_algstr_0 X1)) \quad (9)$$

Assume the following.

$$\forall X0.(l1_algstr_0 X0) \Rightarrow (l1_struct_0 X0) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2_struct_0 \\ & X0) \wedge (l1_struct_0 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \wedge \\ & ((m1_subset_1 X2 (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (u1_struct_0 \\ & X1)))))) \Rightarrow (m1_subset_1 (k4_vectsp_1 X0 X1 X2 X3) (u1_struct_0 X1)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((l1_algstr_0 X0) \wedge ((m1_subset_1 \\ & X1 (u1_struct_0 X0)) \wedge (m1_subset_1 X2 (u1_struct_0 X0)))) \Rightarrow (m1_subset_1 \\ & (k1_algstr_0 X0 X1 X2) (u1_struct_0 X0)) \end{aligned} \quad (12)$$

Theorem 1

$$\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 ((v3_group_1 X0) \wedge ((v4_vectsp_1 X0) \wedge (\\
& (v5_vectsp_1 X0) \wedge (l6_algstr_0 X0)))))) \Rightarrow (\forall X1.((\neg v2_struct_0 \\
& X1) \wedge ((v13_algstr_0 X1) \wedge ((v3_rlvect_1 X1) \wedge ((v4_rlvect_1 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 (l1_vectsp_1 X1 X0)))))) \Rightarrow (\forall X2. \\
& ((\neg v2_struct_0 X2) \wedge ((v13_algstr_0 X2) \wedge ((v3_rlvect_1 X2) \wedge ((\\
& v4_rlvect_1 X2) \wedge ((v8_vectsp_1 X2 X0) \wedge ((v9_vectsp_1 X2 X0) \wedge ((\\
& v10_vectsp_1 X2 X0) \wedge ((v11_vectsp_1 X2 X0) \wedge (l1_vectsp_1 X2 X0)))))) \Rightarrow \\
& (\forall X3.(m1_subset_1 X3 (u1_struct_0 X1)) \Rightarrow (\forall X4.(m1_subset_1 \\
& X4 (u1_struct_0 X1)) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 \\
& X2)) \Rightarrow (\forall X6.(m1_subset_1 X6 (u1_struct_0 X2)) \Rightarrow (\forall X7. \\
& (m1_subset_1 X7 (u1_struct_0 X0)) \Rightarrow (\forall X8.(m1_subset_1 X8 \\
& (u1_struct_0 X0)) \Rightarrow (\forall X9.((v1_funct_1 X9) \wedge ((v1_funct_2 \\
& X9 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)) \wedge ((v1_bilinear X9 X0 X1 X2) \wedge ((v2_bilinear X9 X0 X1 X2) \wedge ((v3_bilinear \\
& X9 X0 X1 X2) \wedge ((v4_bilinear X9 X0 X1 X2) \wedge (m1_subset_1 X9 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)))))) \Rightarrow (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X9 (k1_algstr_0 X1 X3 (k4_vectsp_1 X0 X1 X7 X4)) \\
& (k1_algstr_0 X2 X5 (k4_vectsp_1 X0 X2 X8 X6)) = k1_algstr_0 X0 (k1_algstr_0 \\
& X0 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 X2) (u1_struct_0 \\
& X0) X9 X3 X5) (k6_algstr_0 X0 X8 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 \\
& X2) (u1_struct_0 X0) X9 X3 X6))) (k1_algstr_0 X0 (k6_algstr_0 X0 \\
& X7 (k2_binop_1 (u1_struct_0 X1) (u1_struct_0 X2) (u1_struct_0 \\
& X0) X9 X4 X5)) (k6_algstr_0 X0 X7 (k6_algstr_0 X0 X8 (k2_binop_1 (\\
& u1_struct_0 X1) (u1_struct_0 X2) (u1_struct_0 X0) X9 X4 X6)))))))))
\end{aligned}$$