

## t28\_bilinear

(TMa8kL6GQbE7dZZyRe5a5vq8wdPQ1aQtRjw)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  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  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  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  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow (\forall X1. \\
 & ((\neg v2\_struct\_0 X1) \wedge (l1\_vectsp\_1 X1 X0)) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 \\
 & X2) \wedge (l1\_vectsp\_1 X2 X0)) \Rightarrow (\forall X3. (m1\_subset\_1 X3 (u1\_struct\_0 \\
 & X1)) \Rightarrow (\forall X4. (m1\_subset\_1 X4 (u1\_struct\_0 X2)) \Rightarrow (\forall X5. \\
 & (m1\_subset\_1 X5 (u1\_struct\_0 X2)) \Rightarrow (\forall X6. ((v1\_funct\_1 X6) \wedge \\
 & ((v1\_funct\_2 X6 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) \\
 & (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X6 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
 & (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) (u1\_struct\_0 \\
 & X0)))))) \Rightarrow ((v1\_bilinear X6 X0 X1 X2) \Rightarrow (k2\_binop\_1 (u1\_struct\_0 \\
 & X1) (u1\_struct\_0 X2) (u1\_struct\_0 X0) X6 X3 (k1\_algstr\_0 X2 X4 X5) = \\
 & k1\_algstr\_0 X0 (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2) ( \\
 & u1\_struct\_0 X0) X6 X3 X4) (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 \\
 & X2) (u1\_struct\_0 X0) X6 X3 X5))))))))))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_algstr\_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge (l1\_vectsp\_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2\_struct\_0 \\
& X2) \wedge (l1\_vectsp\_1 X2 X0)) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 \\
& X1)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 X1)) \Rightarrow (\forall X5. \\
& (m1\_subset\_1 X5 (u1\_struct\_0 X2)) \Rightarrow (\forall X6.((v1\_funct\_1 X6) \wedge \\
& ((v1\_funct\_2 X6 (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) \\
& (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X6 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\
& (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) (u1\_struct\_0 \\
& X0)))))) \Rightarrow ((v2\_bilinear X6 X0 X1 X2) \Rightarrow (k2\_binop\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X2) (u1\_struct\_0 X0) X6 (k1\_algstr\_0 X1 X3 X4) X5 = \\
& k1\_algstr\_0 X0 (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2) ( \\
& u1\_struct\_0 X0) X6 X3 X5) (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 \\
& X2) (u1\_struct\_0 X0) X6 X4 X5))))))))))
\end{aligned} \tag{2}$$

Assume the following.

$$\forall X0.(l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \tag{3}$$

Assume the following.

$$\forall X0.(l1\_struct\_0 X0) \Rightarrow (\forall X1.(l1\_vectsp\_1 X1 X0) \Rightarrow (l2\_algstr\_0 X1)) \tag{4}$$

Assume the following.

$$\forall X0.(l1\_algstr\_0 X0) \Rightarrow (l1\_struct\_0 X0) \tag{5}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l1\_algstr\_0 X0) \wedge ((m1\_subset\_1 X1 (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 X2 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 (k1\_algstr\_0 X0 X1 X2) (u1\_struct\_0 X0)) \tag{6}$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l2\_algstr\_0 \\ & X0))) \Rightarrow (\forall X1.((\neg v2\_struct\_0 X1) \wedge (l1\_vectsp\_1 X1 X0)) \Rightarrow ( \\ & \forall X2.((\neg v2\_struct\_0 X2) \wedge (l1\_vectsp\_1 X2 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X1)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 \\ & (u1\_struct\_0 X1)) \Rightarrow (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 X2)) \Rightarrow \\ & (\forall X6.(m1\_subset\_1 X6 (u1\_struct\_0 X2)) \Rightarrow (\forall X7.(( \\ & v1\_funct\_1 X7) \wedge ((v1\_funct\_2 X7 (k2\_zfmisc\_1 (u1\_struct\_0 X1) \\ & (u1\_struct\_0 X2)) (u1\_struct\_0 X0)) \wedge ((v1\_bilinear X7 X0 X1 X2) \wedge \\ & ((v2\_bilinear X7 X0 X1 X2) \wedge (m1\_subset\_1 X7 (k1\_zfmisc\_1 (k2\_zfmisc\_1 \\ & (k2\_zfmisc\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2)) (u1\_struct\_0 \\ & X0)))))) \Rightarrow (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2) (u1\_struct\_0 \\ & X0) X7 (k1\_algstr\_0 X1 X3 X4) (k1\_algstr\_0 X2 X5 X6) = k1\_algstr\_0 \\ & X0 (k1\_algstr\_0 X0 (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 X2) \\ & (u1\_struct\_0 X0) X7 X3 X5) (k2\_binop\_1 (u1\_struct\_0 X1) (u1\_struct\_0 \\ & X2) (u1\_struct\_0 X0) X7 X3 X6)) (k1\_algstr\_0 X0 (k2\_binop\_1 (u1\_struct\_0 \\ & X1) (u1\_struct\_0 X2) (u1\_struct\_0 X0) X7 X4 X5) (k2\_binop\_1 (u1\_struct\_0 \\ & X1) (u1\_struct\_0 X2) (u1\_struct\_0 X0) X7 X4 X6)))))))))) \end{aligned}$$