t42_bilinear (TMSCDxBmjPs9gL2xdY5qCR5yCEL3CCNjjtq)

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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 $v1\_vectsp\_1 : \iota \Rightarrow o$ be given. Let $l6\_algstr\_0 : \iota \Rightarrow o$ 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 $v2\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $v4\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1\_zfmisc\_1 : \iota \Rightarrow \iota$ be given. Let $v1\_vectsp\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k10\_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_struct\_0 : \iota \Rightarrow \iota$ be given. Let $l3\_algstr\_0 : \iota \Rightarrow o$ be given. Let $k2\_binop\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k4\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2\_algstr\_0 : \iota \Rightarrow o$ be given. Let $k1\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ 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.

$$\forall X0.((\neg v2\_struct\_0\ X0) \wedge ((v13\_algstr\_0\ X0) \wedge ((v3\_rlvect\_1\ X0) \wedge ((v4\_rlvect\_1\ X0) \wedge ((v1\_vectsp\_1\ X0) \wedge (l6\_algstr\_0\ X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0)) \Rightarrow (k6\_algstr\_0\ X0\ X1\ (k4\_struct\_0\ X0) = k4\_struct\_0\ X0)) \tag{1}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge(l1\_vectsp\_1\ X2\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X1))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X2))\Rightarrow(\forall X5.(m1\_subset\_1\ X5\ (u1\_struct\_0\ X0))\Rightarrow(\forall X6.((v1\_funct\_1\ X6)\wedge((v1\_funct\_2\ X6\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X6\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))))))\Rightarrow((v4\_bilinear\ X6\ X0\ X1\ X2)\Rightarrow(k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X6\ (k4\_vectsp\_1\ X0\ X1\ X5\ X3)\ X4 = k6\_algstr\_0\ X0\ X5\ (k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X6\ X3\ X4)))))))))) \tag{2}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l2\_algstr\_0\ X0))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge(l1\_vectsp\_1\ X2\ X0))\Rightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X1))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X1))\Rightarrow(\forall X5.(m1\_subset\_1\ X5\ (u1\_struct\_0\ X2))\Rightarrow(\forall X6.((v1\_funct\_1\ X6)\wedge((v1\_funct\_2\ X6\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X6\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))))))\Rightarrow((v2\_bilinear\ X6\ X0\ X1\ X2)\Rightarrow(k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X6\ (k1\_algstr\_0\ X1\ X3\ X4)\ X5 = k1\_algstr\_0\ X0\ (k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X6\ X3\ X5)\ (k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X6\ X4\ X5)))))))))) \tag{3}$$

Assume the following.

$$\forall X0.(l6\_algstr\_0\ X0)\Rightarrow((l2\_algstr\_0\ X0)\wedge(l5\_algstr\_0\ X0)) \tag{4}$$

Assume the following.

$$\forall X0.(l5\_algstr\_0\ X0)\Rightarrow((l4\_algstr\_0\ X0)\wedge(l4\_struct\_0\ X0)) \tag{5}$$

Assume the following.

$$\forall X0.(l4\_algstr\_0\ X0)\Rightarrow((l3\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0)) \tag{6}$$

Assume the following.

$$\forall X0.(l2\_algstr\_0\ X0)\Rightarrow((l2\_struct\_0\ X0)\wedge(l1\_algstr\_0\ X0)) \tag{7}$$

Assume the following.

$$\forall X0.(l1\_struct\_0\ X0)\Rightarrow(\forall X1.(l1\_vectsp\_1\ X1\ X0)\Rightarrow(l2\_algstr\_0\ X1)) \tag{8}$$

Assume the following.

$$\forall X0.(l1\_algstr\_0\ X0)\Rightarrow(l1\_struct\_0\ X0) \tag{9}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.(((\neg v2\_struct\_0\ X0)\wedge(l1\_struct\_0\ X0))\wedge(((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\wedge((m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X3\ (u1\_struct\_0\ X1)))))\Rightarrow(m1\_subset\_1\ (k4\_vectsp\_1\ X0\ X1\ X2\ X3)\ (u1\_struct\_0\ X1)) \tag{10}$$

Assume the following.

$$\forall X0.(l2\_struct\_0\ X0)\Rightarrow(m1\_subset\_1\ (k4\_struct\_0\ X0)\ (u1\_struct\_0\ X0)) \tag{11}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.((l1\_algstr\_0\ X0)\wedge((m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X2\ (u1\_struct\_0\ X0))))\Rightarrow(m1\_subset\_1\ (k1\_algstr\_0\ X0\ X1\ X2)\ (u1\_struct\_0\ X0)) \tag{12}$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.\forall X3.((l2\_struct\_0\ X0)\wedge(((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\wedge(((\neg v2\_struct\_0\ X2)\wedge(l1\_vectsp\_1\ X2\ X0))\wedge((v1\_funct\_1\ X3)\wedge((v1\_funct\_2\ X3\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))))))))\Rightarrow(m1\_subset\_1\ (k10\_bilinear\ X0\ X1\ X2\ X3)\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X1))) \tag{13}$$

Assume the following.

$$\forall X0.(l2\_algstr\_0\ X0)\Rightarrow((v4\_rlvect\_1\ X0)\Leftrightarrow(\forall X1.(m1\_subset\_1\ X1\ (u1\_struct\_0\ X0))\Rightarrow(k1\_algstr\_0\ X0\ X1\ (k4\_struct\_0\ X0) = X1))) \tag{14}$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge(l3\_algstr\_0\ X0))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\Rightarrow(\forall X2.(m1\_subset\_1\ X2\ (k1\_zfmisc\_1\ (u1\_struct\_0\ X1)))\Rightarrow((v1\_vectsp\_4\ X2\ X0\ X1)\Leftrightarrow(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X1))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X1))\Rightarrow(((X3 \in X2)\wedge(X4 \in X2))\Rightarrow(k1\_algstr\_0\ X1\ X3\ X4 \in X2))))\wedge(\forall X3.(m1\_subset\_1\ X3\ (u1\_struct\_0\ X0))\Rightarrow(\forall X4.(m1\_subset\_1\ X4\ (u1\_struct\_0\ X1))\Rightarrow((X4 \in X2)\Rightarrow(k4\_vectsp\_1\ X0\ X1\ X3\ X4 \in X2))))))) \tag{15}$$

Assume the following.

$$\forall X0.(l2\_struct\_0\ X0)\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge (l1\_vectsp\_1\ X1\ X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge(l1\_vectsp\_1\ X2\ X0))\Rightarrow(\forall X3.((v1\_funct\_1\ X3)\wedge((v1\_funct\_2\ X3\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))))))\Rightarrow(k10\_bilinear\ X0\ X1\ X2\ X3 = ReplSep\ (toset\ (\lambda X4 : \iota.m1\_subset\_1\ X4\ (u1\_struct\_0\ X1)))\ (\lambda X4 : \iota.\forall X5.(m1\_subset\_1\ X5\ (u1\_struct\_0\ X2))\Rightarrow(k2\_binop\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2)\ (u1\_struct\_0\ X0)\ X3\ X4\ X5 = k4\_struct\_0\ X0))\ (\lambda X4 : \iota.X4)))) \tag{16}$$

Theorem 1

$$\forall X0.((\neg v2\_struct\_0\ X0)\wedge((v13\_algstr\_0\ X0)\wedge((v3\_rlvect\_1\ X0)\wedge((v4\_rlvect\_1\ X0)\wedge((v1\_vectsp\_1\ X0)\wedge(l6\_algstr\_0\ X0))))))\Rightarrow(\forall X1.((\neg v2\_struct\_0\ X1)\wedge(l1\_vectsp\_1\ X1\ X0))\Rightarrow(\forall X2.((\neg v2\_struct\_0\ X2)\wedge(l1\_vectsp\_1\ X2\ X0))\Rightarrow(\forall X3.((v1\_funct\_1\ X3)\wedge((v1\_funct\_2\ X3\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))\wedge((v2\_bilinear\ X3\ X0\ X1\ X2)\wedge((v4\_bilinear\ X3\ X0\ X1\ X2)\wedge(m1\_subset\_1\ X3\ (k1\_zfmisc\_1\ (k2\_zfmisc\_1\ (k2\_zfmisc\_1\ (u1\_struct\_0\ X1)\ (u1\_struct\_0\ X2))\ (u1\_struct\_0\ X0))))))))\Rightarrow(v1\_vectsp\_4\ (k10\_bilinear\ X0\ X1\ X2\ X3)\ X0\ X1))))$$