

t24_bilinear (TM- FGk3rCY3VdFDTqydPpLVjH1qipG5h7WHw)

October 27, 2020

Let $v2_struct_0 : \iota \Rightarrow o$ be given. Let $l3_algstr_0 : \iota \Rightarrow o$ 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 $u1_struct_0 : \iota \Rightarrow \iota$ be given. Let $m1_subset_1 : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k1_zfmisc_1 : \iota \Rightarrow \iota$ be given. Let $k2_zfmisc_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r2_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k7_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k9_bilinear : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k6_hahnban1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k3_funct_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l1_struct_0 : \iota \Rightarrow o$ be given. Let $k1_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $r1_tarski : \iota \Rightarrow \iota \Rightarrow o$ be given. Let $k2_relset_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $k2_binop_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $v1_xboole_0 : \iota \Rightarrow o$ be given. Let $k1_funct_1 : \iota \Rightarrow \iota \Rightarrow \iota$ be given. Let $l2_algstr_0 : \iota \Rightarrow o$ be given. Let $l2_struct_0 : \iota \Rightarrow o$ be given. Let $l1_algstr_0 : \iota \Rightarrow o$ be given. Let $k6_algstr_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$ be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2_struct_0 X0) \wedge (l1_struct_0 X0)) \Rightarrow (\forall X1. \\
 & ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2. ((\neg v2_struct_0 \\
 & X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 \\
 & X3 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
 & X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
 & (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 X0)))))) \Rightarrow (\forall X4. \\
 & (m1_subset_1 X4 (u1_struct_0 X1)) \Rightarrow ((k1_relset_1 (u1_struct_0 \\
 & X2) (k7_bilinear X0 X1 X2 X3 X4) = u1_struct_0 X2) \wedge ((r1_tarski (k2_relset_1 \\
 & (u1_struct_0 X0) (k7_bilinear X0 X1 X2 X3 X4)) (u1_struct_0 X0)) \wedge \\
 & (\forall X5. (m1_subset_1 X5 (u1_struct_0 X2)) \Rightarrow (k3_funct_2 (u1_struct_0 \\
 & X2) (u1_struct_0 X0) (k7_bilinear X0 X1 X2 X3 X4) X5 = k2_binop_1 (\\
 & u1_struct_0 X1) (u1_struct_0 X2) (u1_struct_0 X0) X3 X4 X5)))))) \\
 & \tag{1}
 \end{aligned}$$

Assume the following.

$$\begin{aligned}
 & \forall X0. \forall X1. \forall X2. \forall X3. (((v1_funct_1 X2) \wedge \\
 & ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 (k2_zfmisc_1 \\
 & X0 X1)))) \wedge ((v1_funct_1 X3) \wedge ((v1_funct_2 X3 X0 X1) \wedge (m1_subset_1 \\
 & X3 (k1_zfmisc_1 (k2_zfmisc_1 X0 X1)))))) \Rightarrow ((r2_funct_2 X0 X1 X2 \\
 & X3) \Leftrightarrow (X2 = X3)) \\
 & \tag{2}
 \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.((\neg v1_boole_0 X0)\wedge \\ & (((v1_funct_1 X2)\wedge((v1_funct_2 X2 X0 X1)\wedge(m1_subset_1 X2 (k1_zfmisc_1 \\ & (k2_zfmisc_1 X0 X1))))))\wedge(m1_subset_1 X3 X0)))\Rightarrow(k3_funct_2 X0 \\ & X1 X2 X3 = k1_funct_1 X2 X3) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0.((\neg v2_struct_0 X0)\wedge(l1_struct_0 X0))\Rightarrow(\neg v1_boole_0 (u1_struct_0 X0)) \quad (4)$$

Assume the following.

$$\forall X0.(l3_algstr_0 X0)\Rightarrow(l1_struct_0 X0) \quad (5)$$

Assume the following.

$$\forall X0.(l2_algstr_0 X0)\Rightarrow((l2_struct_0 X0)\wedge(l1_algstr_0 X0)) \quad (6)$$

Assume the following.

$$\forall X0.(l1_struct_0 X0)\Rightarrow(\forall X1.(l1_vectsp_1 X1 X0)\Rightarrow (l2_algstr_0 X1)) \quad (7)$$

Assume the following.

$$\forall X0.(l1_algstr_0 X0)\Rightarrow(l1_struct_0 X0) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.\forall X4.(((\neg v2_struct_0 \\ & X0)\wedge(l3_algstr_0 X0))\wedge(((\neg v2_struct_0 X1)\wedge(l1_vectsp_1 X1 X0))\wedge \\ & (((\neg v2_struct_0 X2)\wedge(l1_vectsp_1 X2 X0))\wedge(((v1_funct_1 X3)\wedge \\ & ((v1_funct_2 X3 (u1_struct_0 X1) (u1_struct_0 X0))\wedge(m1_subset_1 \\ & X3 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X0))))))\wedge \\ & ((v1_funct_1 X4)\wedge((v1_funct_2 X4 (u1_struct_0 X2) (u1_struct_0 \\ & X0))\wedge(m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\ & X2) (u1_struct_0 X0))))))))))\Rightarrow((v1_funct_1 (k9_bilinear X0 X1 \\ & X2 X3 X4))\wedge((v1_funct_2 (k9_bilinear X0 X1 X2 X3 X4) (k2_zfmisc_1 \\ & (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 X0))\wedge(m1_subset_1 \\ & (k9_bilinear X0 X1 X2 X3 X4) (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\ & (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 X0)))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. (((\neg v2_struct_0 \\
& X0) \wedge (l1_struct_0 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \wedge \\
& (((\neg v2_struct_0 X2) \wedge (l1_vectsp_1 X2 X0)) \wedge ((v1_funct_1 X3) \wedge \\
& ((v1_funct_2 X3 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) \\
& (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 (k2_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)))))) \wedge (m1_subset_1 X4 (u1_struct_0 X1)))))) \Rightarrow ((v1_funct_1 \\
& (k7_bilinear X0 X1 X2 X3 X4)) \wedge ((v1_funct_2 (k7_bilinear X0 X1 X2 \\
& X3 X4) (u1_struct_0 X2) (u1_struct_0 X0)) \wedge (m1_subset_1 (k7_bilinear \\
& X0 X1 X2 X3 X4) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X2) (u1_struct_0 \\
& X0))))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2_struct_0 \\
& X0) \wedge (l3_algstr_0 X0)) \wedge (((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \wedge \\
& ((m1_subset_1 X2 (u1_struct_0 X0)) \wedge ((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X0))))))))) \Rightarrow ((v1_funct_1 \\
& (k6_hahnban1 X0 X1 X2 X3)) \wedge ((v1_funct_2 (k6_hahnban1 X0 X1 X2 X3) \\
& (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (m1_subset_1 (k6_hahnban1 \\
& X0 X1 X2 X3) (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 \\
& X0))))))
\end{aligned} \tag{11}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. ((\neg v1_xboole_0 X0) \wedge \\
& (((v1_funct_1 X2) \wedge ((v1_funct_2 X2 X0 X1) \wedge (m1_subset_1 X2 (k1_zfmisc_1 \\
& (k2_zfmisc_1 X0 X1)))))) \wedge (m1_subset_1 X3 X0))) \Rightarrow (m1_subset_1 (\\
& k3_funct_2 X0 X1 X2 X3) X1)
\end{aligned} \tag{12}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2_struct_0 X0) \wedge (l3_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2. (m1_subset_1 \\
& X2 (u1_struct_0 X0)) \Rightarrow (\forall X3. ((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X0)))))) \Rightarrow (\forall X4. \\
& ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 (u1_struct_0 X1) (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
& X1) (u1_struct_0 X0)))))) \Rightarrow ((X4 = k6_hahnban1 X0 X1 X2 X3) \Leftrightarrow (\forall X5. \\
& (m1_subset_1 X5 (u1_struct_0 X1)) \Rightarrow (k3_funct_2 (u1_struct_0 X1) \\
& (u1_struct_0 X0) X4 X5 = k6_algstr_0 X0 X2 (k3_funct_2 (u1_struct_0 \\
& X1) (u1_struct_0 X0) X3 X5))))))
\end{aligned} \tag{13}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l3_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X0)))))) \Rightarrow (\forall X4. \\
& ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 (u1_struct_0 X2) (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
& X2) (u1_struct_0 X0)))))) \Rightarrow (\forall X5.((v1_funct_1 X5) \wedge ((v1_funct_2 \\
& X5 (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X5 (k1_zfmisc_1 (k2_zfmisc_1 (k2_zfmisc_1 \\
& (u1_struct_0 X1) (u1_struct_0 X2)) (u1_struct_0 X0)))))) \Rightarrow ((X5 = \\
& k9_bilinear X0 X1 X2 X3 X4) \Leftrightarrow (\forall X6.(m1_subset_1 X6 (u1_struct_0 \\
& X1)) \Rightarrow (\forall X7.(m1_subset_1 X7 (u1_struct_0 X2)) \Rightarrow (k2_binop_1 \\
& (u1_struct_0 X1) (u1_struct_0 X2) (u1_struct_0 X0) X5 X6 X7 = k6_algstr_0 \\
& X0 (k3_funct_2 (u1_struct_0 X1) (u1_struct_0 X0) X3 X6) (k3_funct_2 \\
& (u1_struct_0 X2) (u1_struct_0 X0) X4 X7)))))))))
\end{aligned} \tag{14}$$

Theorem 1

$$\begin{aligned}
& \forall X0.((\neg v2_struct_0 X0) \wedge (l3_algstr_0 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2_struct_0 X1) \wedge (l1_vectsp_1 X1 X0)) \Rightarrow (\forall X2.((\neg v2_struct_0 \\
& X2) \wedge (l1_vectsp_1 X2 X0)) \Rightarrow (\forall X3.((v1_funct_1 X3) \wedge ((v1_funct_2 \\
& X3 (u1_struct_0 X1) (u1_struct_0 X0)) \wedge (m1_subset_1 X3 (k1_zfmisc_1 \\
& (k2_zfmisc_1 (u1_struct_0 X1) (u1_struct_0 X0)))))) \Rightarrow (\forall X4. \\
& ((v1_funct_1 X4) \wedge ((v1_funct_2 X4 (u1_struct_0 X2) (u1_struct_0 \\
& X0)) \wedge (m1_subset_1 X4 (k1_zfmisc_1 (k2_zfmisc_1 (u1_struct_0 \\
& X2) (u1_struct_0 X0)))))) \Rightarrow (\forall X5.(m1_subset_1 X5 (u1_struct_0 \\
& X1)) \Rightarrow (r2_funct_2 (u1_struct_0 X2) (u1_struct_0 X0) (k7_bilinear \\
& X0 X1 X2 (k9_bilinear X0 X1 X2 X3 X4) X5) (k6_hahnban1 X0 X2 (k3_funct_2 \\
& (u1_struct_0 X1) (u1_struct_0 X0) X3 X5) X4))))))
\end{aligned}$$