

# t38\_matrlin (TMTto- hZCfs1FLgT5yFpLVmrQEwwVbmouxaDE)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v6\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v33\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v5\_group\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $l6\_algstr\_0 : \iota \Rightarrow o$  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  $v1\_matrlin : \iota \Rightarrow \iota \Rightarrow o$  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  $u1\_struct\_0 : \iota \Rightarrow \iota$  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  $m1\_matrlin : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k10\_matrlin : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k1\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_card\_1 : \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v1\_matrix\_1 : \iota \Rightarrow o$  be given. Let  $k3\_finseq\_2 : \iota \Rightarrow \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k9\_pre\_poly : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_matrlin : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_funct\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0.(v1\_xboole\_0 X0) \Rightarrow (X0 = k1\_xboole\_0) \quad (1)$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \quad (2)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (3)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finseq\_1 X0))) \Rightarrow (k3\_finseq\_1 X0 = k1\_card\_1 X0) \quad (4)$$

Assume the following.

$$\forall X0.(\neg v1\_xboole\_0 X0) \Rightarrow ((\neg v1\_xboole\_0 (k1\_card\_1 X0)) \wedge (v1\_card\_1 (k1\_card\_1 X0))) \quad (5)$$

Assume the following.

$$v1\_xboole\_0 \ k1\_xboole\_0 \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.(m2\_finseq\_1 X1 X0) \Rightarrow ((v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers X0)))) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((\neg v2\_struct\_0 X0) \wedge (\neg v6\_struct\_0 X0) \wedge \\ & ((v13\_algstr\_0 X0) \wedge (v33\_algstr\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v5\_group\_1 \\ & X0) \wedge (v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 X0) \wedge \\ & ((v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \wedge \\ & ((\neg v2\_struct\_0 X1) \wedge (v13\_algstr\_0 X1) \wedge (v8\_vectsp\_1 X1 X0) \wedge \\ & (v9\_vectsp\_1 X1 X0) \wedge (v10\_vectsp\_1 X1 X0) \wedge (v11\_vectsp\_1 X1 \\ & X0) \wedge (v2\_rlvect\_1 X1) \wedge (v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge \\ & ((v1\_matrlin X1 X0) \wedge (l1\_vectsp\_1 X1 X0)))))) \Rightarrow (\forall X2. \\ & (m1\_matrlin X2 X0 X1) \Rightarrow (m2\_finseq\_1 X2 (u1\_struct\_0 X1))) \end{aligned} \quad (8)$$

Assume the following.

$$\forall X0.\forall X1.(m1\_finseq\_1 X1 X0) \Rightarrow ((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1) \wedge (v1\_finseq\_1 X1)) \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1. \forall X2. \forall X3. \forall X4. \forall X5. \\
& (((\neg v2\_struct\_0 X0) \wedge (\neg v6\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge \\
& (v33\_algstr\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v5\_group\_1 X0) \wedge (v4\_vectsp\_1 \\
& X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge \\
& ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \wedge ((\neg v2\_struct\_0 \\
& X1) \wedge (v13\_algstr\_0 X1) \wedge (v8\_vectsp\_1 X1 X0) \wedge (v9\_vectsp\_1 X1 \\
& X0) \wedge (v10\_vectsp\_1 X1 X0) \wedge (v11\_vectsp\_1 X1 X0) \wedge (v2\_rlvect\_1 \\
& X1) \wedge (v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge (v1\_matrlin X1 X0) \wedge \\
& (l1\_vectsp\_1 X1 X0)))))) \wedge (((\neg v2\_struct\_0 X2) \wedge (v13\_algstr\_0 \\
& X2) \wedge (v8\_vectsp\_1 X2 X0) \wedge (v9\_vectsp\_1 X2 X0) \wedge (v10\_vectsp\_1 \\
& X2 X0) \wedge (v11\_vectsp\_1 X2 X0) \wedge (v2\_rlvect\_1 X2) \wedge (v3\_rlvect\_1 \\
& X2) \wedge (v4\_rlvect\_1 X2) \wedge (v1\_matrlin X2 X0) \wedge (l1\_vectsp\_1 X2 X0)))))) \wedge \\
& (((v1\_funct\_1 X3) \wedge (v1\_funct\_2 X3 (u1\_struct\_0 X1) (u1\_struct\_0 \\
& X2)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X2)))))) \wedge ((m1\_finseq\_1 X4 (u1\_struct\_0 X1)) \wedge \\
& (m1\_matrlin X5 X0 X2)))) \Rightarrow ((v1\_matrix\_1 (k10\_matrlin X0 X1 X2 \\
& X3 X4 X5) \wedge (m2\_finseq\_1 (k10\_matrlin X0 X1 X2 X3 X4 X5) (k3\_finseq\_2 \\
& (u1\_struct\_0 X0))))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. ((\neg v2\_struct\_0 X0) \wedge (\neg v6\_struct\_0 X0) \wedge (v13\_algstr\_0 \\
& X0) \wedge (v33\_algstr\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v5\_group\_1 X0) \wedge ( \\
& v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 \\
& X0) \wedge (v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge (v13\_algstr\_0 X1) \wedge (v8\_vectsp\_1 X1 X0) \wedge \\
& (v9\_vectsp\_1 X1 X0) \wedge (v10\_vectsp\_1 X1 X0) \wedge (v11\_vectsp\_1 X1 \\
& X0) \wedge (v2\_rlvect\_1 X1) \wedge (v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge \\
& ((v1\_matrlin X1 X0) \wedge (l1\_vectsp\_1 X1 X0)))))) \Rightarrow (\forall X2. \\
& ((\neg v2\_struct\_0 X2) \wedge (v13\_algstr\_0 X2) \wedge (v8\_vectsp\_1 X2 X0) \wedge \\
& (v9\_vectsp\_1 X2 X0) \wedge (v10\_vectsp\_1 X2 X0) \wedge (v11\_vectsp\_1 X2 \\
& X0) \wedge (v2\_rlvect\_1 X2) \wedge (v3\_rlvect\_1 X2) \wedge (v4\_rlvect\_1 X2) \wedge \\
& ((v1\_matrlin X2 X0) \wedge (l1\_vectsp\_1 X2 X0)))))) \Rightarrow (\forall X3. \\
& ((v1\_funct\_1 X3) \wedge (v1\_funct\_2 X3 (u1\_struct\_0 X1) (u1\_struct\_0 \\
& X2)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X2)))))) \Rightarrow (\forall X4. (m2\_finseq\_1 X4 (u1\_struct\_0 \\
& X1)) \Rightarrow (\forall X5. (m1\_matrlin X5 X0 X2) \Rightarrow (\forall X6. ((v1\_matrix\_1 \\
& X6) \wedge (m2\_finseq\_1 X6 (k3\_finseq\_2 (u1\_struct\_0 X0)))) \Rightarrow ((X6 = k10\_matrlin \\
& X0 X1 X2 X3 X4 X5) \Leftrightarrow ((k3\_finseq\_1 X6 = k3\_finseq\_1 X4) \wedge (\forall X7. \\
& (v7\_ordinal1 X7) \Rightarrow ((X7 \in k9\_xtuple\_0 X4) \Rightarrow (k9\_pre\_poly (u1\_struct\_0 \\
& X0) k5\_numbers (k3\_finseq\_2 (u1\_struct\_0 X0)) X6 X7 = k9\_matrlin \\
& X0 X2 X5 (k3\_funct\_2 (u1\_struct\_0 X1) (u1\_struct\_0 X2) X3 (k7\_partfun1 \\
& (u1\_struct\_0 X1) X4 X7))))))))))
\end{aligned} \tag{11}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\
& X0) \wedge (v33\_algstr\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v5\_group\_1 X0) \wedge \\
& (v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 \\
& X0) \wedge (v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v8\_vectsp\_1 X1 X0) \wedge \\
& (v9\_vectsp\_1 X1 X0) \wedge (v10\_vectsp\_1 X1 X0) \wedge (v11\_vectsp\_1 X1 \\
& X0) \wedge (v2\_rlvect\_1 X1) \wedge (v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge \\
& ((v1\_matrlin X1 X0) \wedge (l1\_vectsp\_1 X1 X0)))))) \Rightarrow (\forall X2. \\
& ((\neg v2\_struct\_0 X2) \wedge ((v13\_algstr\_0 X2) \wedge ((v8\_vectsp\_1 X2 X0) \wedge \\
& (v9\_vectsp\_1 X2 X0) \wedge (v10\_vectsp\_1 X2 X0) \wedge (v11\_vectsp\_1 X2 \\
& X0) \wedge (v2\_rlvect\_1 X2) \wedge (v3\_rlvect\_1 X2) \wedge (v4\_rlvect\_1 X2) \wedge \\
& ((v1\_matrlin X2 X0) \wedge (l1\_vectsp\_1 X2 X0)))))) \Rightarrow (\forall X3. \\
& ((v1\_funct\_1 X3) \wedge ((v1\_funct\_2 X3 (u1\_struct\_0 X1) (u1\_struct\_0 \\
& X2)) \wedge (m1\_subset\_1 X3 (k1\_zfmisc\_1 (k2\_zfmisc\_1 (u1\_struct\_0 \\
& X1) (u1\_struct\_0 X2)))))) \Rightarrow (\forall X4. (m1\_matrlin X4 X0 X1) \Rightarrow ( \\
& \forall X5. (m1\_matrlin X5 X0 X2) \Rightarrow ((k3\_finseq\_1 X4 = k6\_numbers) \Rightarrow \\
& (k10\_matrlin X0 X1 X2 X3 X4 X5 = k1\_xboole\_0))))))
\end{aligned}$$