

## t17\_matrix\_5

(TMK3HUASqXocvdJeUAXzFposcSdfAQL1DaM)

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Let  $v1\_matrix\_1 : \iota \Rightarrow o$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_finseq\_2 : \iota \Rightarrow \iota$  be given. Let  $k2\_numbers : \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_matrix\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_matrix\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_matrix\_5 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_matrix\_5 : \iota \Rightarrow \iota$  be given. 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  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $l6\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k3\_matrix\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_matrix\_3 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_matrix\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_matrix\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k1\_complfld : \iota$  be given. Let  $v36\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v6\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finseq\_1 : \iota \Rightarrow o$  be given. Let  $k1\_matrix\_5 : \iota \Rightarrow \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k2\_matrix\_5 : \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_matrix\_1 : \iota \Rightarrow \iota$  be given. Let  $k3\_matrix\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\begin{aligned}
 & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\
 & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\
 & (v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v4\_vectsp\_1 \\
 & X0) \wedge ((v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\
 & ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\
 & X0)))) \Rightarrow (k3\_matrix\_3 X0 X1 (k2\_matrix\_3 X0 X1) = k1\_matrix\_3 X0 ( \\
 & k3\_finseq\_1 X1) (k1\_matrix\_1 X1)))
 \end{aligned} \tag{1}$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\ & (v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v4\_vectsp\_1 \\ & X0) \wedge ((v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\ & ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\ & X0)))) \Rightarrow (\forall X2.((v1\_matrix\_1 X2) \wedge (m2\_finseq\_1 X2 (k3\_finseq\_2 \\ & (u1\_struct\_0 X0)))) \Rightarrow (((k3\_finseq\_1 X1 = k3\_finseq\_1 X2) \wedge (k1\_matrix\_1 \\ & X1 = k1\_matrix\_1 X2)) \Rightarrow (k3\_matrix\_3 X0 X1 X2 = k3\_matrix\_3 X0 X2 X1)))) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\ & (v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v4\_vectsp\_1 \\ & X0) \wedge ((v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\ & ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\ & X0)))) \Rightarrow (\forall X2.((v1\_matrix\_1 X2) \wedge (m2\_finseq\_1 X2 (k3\_finseq\_2 \\ & (u1\_struct\_0 X0)))) \Rightarrow (((k3\_finseq\_1 X1 = k3\_finseq\_1 X2) \wedge (k1\_matrix\_1 \\ & X1 = k1\_matrix\_1 X2)) \Rightarrow (X1 = k1\_matrix\_4 X0 (k3\_matrix\_3 X0 X1 X2) \\ & X2)))) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\ & (v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v4\_vectsp\_1 \\ & X0) \wedge ((v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\ & ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\ & X0)))) \Rightarrow (k2\_matrix\_3 X0 (k2\_matrix\_3 X0 X1) = X1)) \end{aligned} \quad (4)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. ((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\ & (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2. (m2\_subset\_1 \\ & X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1)) \end{aligned} \quad (5)$$

Assume the following.

$$\forall X0. \forall X1. (m2\_finseq\_1 X1 X0) \Leftrightarrow (m1\_finseq\_1 X1 X0) \quad (6)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (7)$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \quad (8)$$

Assume the following.

$$\begin{aligned} & (\neg v6\_struct\_0 \ k1\_complfld) \wedge ((v13\_algstr\_0 \ k1\_complfld) \wedge (( \\ & v33\_algstr\_0 \ k1\_complfld) \wedge ((v36\_algstr\_0 \ k1\_complfld) \wedge ((v3\_group\_1 \\ & k1\_complfld) \wedge ((v5\_group\_1 \ k1\_complfld) \wedge ((v3\_vectsp\_1 \ k1\_complfld) \wedge \\ & ((v5\_vectsp\_1 \ k1\_complfld) \wedge ((v6\_vectsp\_1 \ k1\_complfld) \wedge ((v2\_rlvect\_1 \\ & k1\_complfld) \wedge ((v3\_rlvect\_1 \ k1\_complfld) \wedge (v4\_rlvect\_1 \ k1\_complfld)))))))))) \\ & \hspace{15em} (9) \end{aligned}$$

Assume the following.

$$(v36\_algstr\_0 \ k1\_complfld) \wedge (v4\_vectsp\_1 \ k1\_complfld) \hspace{10em} (10)$$

Assume the following.

$$\neg v1\_xboole\_0 \ k1\_numbers \hspace{10em} (11)$$

Assume the following.

$$(\neg v2\_struct\_0 \ k1\_complfld) \wedge (v36\_algstr\_0 \ k1\_complfld) \hspace{10em} (12)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (m1\_finseq\_1 \ X1 \ X0) \Rightarrow ((v1\_relat\_1 \ X1) \wedge ( \\ & (v1\_funct\_1 \ X1) \wedge (v1\_finseq\_1 \ X1))) \hspace{5em} (13) \end{aligned}$$

Assume the following.

$$m1\_subset\_1 \ k5\_numbers \ (k1\_zfmisc\_1 \ k1\_numbers) \hspace{10em} (14)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_matrix\_1 \ X0) \wedge (m1\_finseq\_1 \ X0 \ (k3\_finseq\_2 \ k2\_numbers))) \Rightarrow \\ & ((v1\_matrix\_1 \ (k4\_matrix\_5 \ X0)) \wedge (m2\_finseq\_1 \ (k4\_matrix\_5 \ X0) \\ & (k3\_finseq\_2 \ k2\_numbers))) \hspace{5em} (15) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((\neg v2\_struct\_0 \ X0) \wedge ((\neg v6\_struct\_0 \\ & X0) \wedge ((v13\_algstr\_0 \ X0) \wedge ((v33\_algstr\_0 \ X0) \wedge ((v3\_group\_1 \ X0) \wedge \\ & ((v5\_group\_1 \ X0) \wedge ((v2\_rlvect\_1 \ X0) \wedge ((v3\_rlvect\_1 \ X0) \wedge ((v4\_rlvect\_1 \\ & X0) \wedge ((v4\_vectsp\_1 \ X0) \wedge ((v5\_vectsp\_1 \ X0) \wedge (l6\_algstr\_0 \ X0)))))))))) \wedge \\ & (((v1\_matrix\_1 \ X1) \wedge (m1\_finseq\_1 \ X1 \ (k3\_finseq\_2 \ (u1\_struct\_0 \\ & X0)))) \wedge ((v1\_matrix\_1 \ X2) \wedge (m1\_finseq\_1 \ X2 \ (k3\_finseq\_2 \ (u1\_struct\_0 \\ & X0)))))) \Rightarrow ((v1\_matrix\_1 \ (k3\_matrix\_3 \ X0 \ X1 \ X2)) \wedge (m2\_finseq\_1 \\ & (k3\_matrix\_3 \ X0 \ X1 \ X2) \ (k3\_finseq\_2 \ (u1\_struct\_0 \ X0)))) \hspace{5em} (16) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 \ X0) \wedge ((v1\_funct\_1 \ X0) \wedge (v1\_finseq\_1 \ X0))) \Rightarrow \\ & (m2\_subset\_1 \ (k3\_finseq\_1 \ X0) \ k1\_numbers \ k5\_numbers) \hspace{5em} (17) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (\neg v6\_struct\_0 X0) \wedge \\ & ((v13\_algstr\_0 X0) \wedge (v33\_algstr\_0 X0) \wedge (v3\_group\_1 X0) \wedge (v5\_group\_1 \\ & X0) \wedge (v2\_rlvect\_1 X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge \\ & ((v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \wedge \\ & ((v1\_matrix\_1 X1) \wedge (m1\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\ & X0)))) \Rightarrow ((v1\_matrix\_1 (k2\_matrix\_3 X0 X1) \wedge (m2\_finseq\_1 (k2\_matrix\_3 \\ & X0 X1) (k3\_finseq\_2 (u1\_struct\_0 X0)))) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_matrix\_1 X0) \wedge (m1\_finseq\_1 X0 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\ & ((v1\_matrix\_1 (k1\_matrix\_5 X0) \wedge (m2\_finseq\_1 (k1\_matrix\_5 X0) \\ & (k3\_finseq\_2 (u1\_struct\_0 k1\_complfld)))) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_relat\_1 X0) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finseq\_1 \\ & X0) \wedge (v1\_matrix\_1 X0)))) \Rightarrow (m1\_subset\_1 (k1\_matrix\_1 X0) k5\_numbers) \end{aligned} \quad (20)$$

Assume the following.

$$(v36\_algstr\_0 k1\_complfld) \wedge (l6\_algstr\_0 k1\_complfld) \quad (21)$$

Assume the following.

$$\begin{aligned} & \forall X0. (v7\_ordinal1 X0) \Rightarrow (\forall X1. (v7\_ordinal1 X1) \Rightarrow (k8\_matrix\_5 \\ & X0 X1 = k2\_matrix\_5 (k1\_matrix\_3 k1\_complfld X0 X1))) \end{aligned} \quad (22)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_matrix\_1 X0) \wedge (m2\_finseq\_1 X0 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\ & (k4\_matrix\_5 X0 = k2\_matrix\_5 (k2\_matrix\_3 k1\_complfld (k1\_matrix\_5 \\ & X0))) \end{aligned} \quad (23)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_matrix\_1 X0) \wedge (m2\_finseq\_1 X0 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\ & (\forall X1. ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\ & (k3\_matrix\_5 X0 X1 = k2\_matrix\_5 (k3\_matrix\_3 k1\_complfld (k1\_matrix\_5 \\ & X0) (k1\_matrix\_5 X1)))) \end{aligned} \quad (24)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((v1\_matrix\_1 X0) \wedge (m2\_finseq\_1 X0 (k3\_finseq\_2 (u1\_struct\_0 \\ & k1\_complfld)))) \Rightarrow (k2\_matrix\_5 X0 = X0) \end{aligned} \quad (25)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\
& X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\
& (v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge ((v4\_vectsp\_1 \\
& X0) \wedge ((v5\_vectsp\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\
& ((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 (u1\_struct\_0 \\
& X0)))) \Rightarrow (\forall X2.((v1\_matrix\_1 X2) \wedge (m2\_finseq\_1 X2 (k3\_finseq\_2 \\
& (u1\_struct\_0 X0)))) \Rightarrow ((X2 = k2\_matrix\_3 X0 X1) \Leftrightarrow ((k3\_finseq\_1 X2 = \\
& k3\_finseq\_1 X1) \wedge ((k1\_matrix\_1 X2 = k1\_matrix\_1 X1) \wedge (\forall X3. \\
& (v7\_ordinal1 X3) \Rightarrow (\forall X4.(v7\_ordinal1 X4) \Rightarrow ((k4\_tarski X3 \\
& X4 \in k2\_matrix\_1 X1) \Rightarrow (k3\_matrix\_1 (u1\_struct\_0 X0) X2 X3 X4 = k4\_algstr\_0 \\
& X0 (k3\_matrix\_1 (u1\_struct\_0 X0) X1 X3 X4))))))))))
\end{aligned} \tag{26}$$

Assume the following.

$$\forall X0.((v1\_matrix\_1 X0) \wedge (m2\_finseq\_1 X0 (k3\_finseq\_2 k2\_numbers))) \Rightarrow (k1\_matrix\_5 X0 = X0) \tag{27}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \tag{28}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((v1\_matrix\_1 X0) \wedge (m2\_finseq\_1 X0 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\
& (\forall X1.((v1\_matrix\_1 X1) \wedge (m2\_finseq\_1 X1 (k3\_finseq\_2 k2\_numbers))) \Rightarrow \\
& (((k3\_finseq\_1 X0 = k3\_finseq\_1 X1) \wedge ((k1\_matrix\_1 X0 = k1\_matrix\_1 \\
& X1) \wedge (k3\_matrix\_5 X0 X1 = k8\_matrix\_5 (k3\_finseq\_1 X0) (k1\_matrix\_1 \\
& X0)))) \Rightarrow (X1 = k4\_matrix\_5 X0))
\end{aligned}$$