

## t21\_rmod.2

(TMTVP9B9h1XCJJxzfgKtSvFT8ddpMYNK3B1)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v4\_vectsp\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_vectsp\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_rmod.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_struct\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_vectsp\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc.1 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_rmod.2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l5\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l2\_struct.0 : \iota \Rightarrow o$  be given. Let  $l1\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l1\_struct.0 : \iota \Rightarrow o$  be given. Let  $k4\_struct.0 : \iota \Rightarrow \iota$  be given. Let  $u1\_algstr\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_relat.1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc.1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $u1\_vectsp.2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_rlvect.1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. (m1\_subset.1 X0 (k1\_zfmisc.1 X1)) \Leftrightarrow (r1\_tarski X0 X1) \quad (1)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct.0 X0) \wedge ((v13\_algstr.0 X0) \wedge ((v3\_group.1 X0) \wedge ((v4\_vectsp.1 X0) \wedge ((v5\_vectsp.1 X0) \wedge ((v2\_rlvect.1 X0) \wedge ((v3\_rlvect.1 X0) \wedge ((v4\_rlvect.1 X0) \wedge (l6\_algstr.0 X0)))))))))) \Rightarrow \\ & (\forall X1. ((\neg v2\_struct.0 X1) \wedge ((v13\_algstr.0 X1) \wedge ((v2\_rlvect.1 X1) \wedge ((v3\_rlvect.1 X1) \wedge ((v4\_rlvect.1 X1) \wedge ((v4\_vectsp.2 X1 X0) \wedge (l1\_vectsp.2 X1 X0)))))))))) \Rightarrow (\forall X2. (m1\_subset.1 X2 (k1\_zfmisc.1 (u1\_struct.0 X1))) \Rightarrow (\forall X3. (m1\_rmod.2 X3 X0 X1) \Rightarrow ((u1\_struct.0 X3 = X2) \Rightarrow (v1\_rmod.2 X2 X0 X1)))))) \quad (2) \end{aligned}$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. (((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge \\ & ((v3\_group\_1 X0) \wedge (v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 \\ & X0) \wedge (v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \wedge \\ & ((\neg v2\_struct\_0 X1) \wedge (v13\_algstr\_0 X1) \wedge (v2\_rlvect\_1 X1) \wedge ( \\ & v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge (v4\_vectsp\_2 X1 X0) \wedge (l1\_vectsp\_2 \\ & X1 X0)))))) \Rightarrow (\forall X2. (m1\_rmod\_2 X2 X0 X1) \Rightarrow ((\neg v2\_struct\_0 \\ & X2) \wedge (v13\_algstr\_0 X2) \wedge (v2\_rlvect\_1 X2) \wedge (v3\_rlvect\_1 X2) \wedge \\ & ((v4\_rlvect\_1 X2) \wedge (v4\_vectsp\_2 X2 X0) \wedge (l1\_vectsp\_2 X2 X0)))))) \end{aligned} \quad (3)$$

Assume the following.

$$\forall X0. (l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \quad (4)$$

Assume the following.

$$\forall X0. (l2\_algstr\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l1\_algstr\_0 X0)) \quad (5)$$

Assume the following.

$$\forall X0. (l1\_struct\_0 X0) \Rightarrow (\forall X1. (l1\_vectsp\_2 X1 X0) \Rightarrow (l2\_algstr\_0 X1)) \quad (6)$$

Assume the following.

$$\forall X0. (l1\_algstr\_0 X0) \Rightarrow (l1\_struct\_0 X0) \quad (7)$$

Assume the following.

$$\forall X0. (l1\_struct\_0 X0) \Rightarrow (\forall X1. (r1\_struct\_0 X0 X1) \Leftrightarrow (X1 \in u1\_struct\_0 X0)) \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge (v13\_algstr\_0 X0) \wedge (v3\_group\_1 \\ & X0) \wedge (v4\_vectsp\_1 X0) \wedge (v5\_vectsp\_1 X0) \wedge (v2\_rlvect\_1 X0) \wedge \\ & ((v3\_rlvect\_1 X0) \wedge (v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))) \Rightarrow \\ & (\forall X1. ((\neg v2\_struct\_0 X1) \wedge (v13\_algstr\_0 X1) \wedge (v2\_rlvect\_1 \\ & X1) \wedge (v3\_rlvect\_1 X1) \wedge (v4\_rlvect\_1 X1) \wedge (v4\_vectsp\_2 X1 X0) \wedge \\ & (l1\_vectsp\_2 X1 X0)))))) \Rightarrow (\forall X2. ((\neg v2\_struct\_0 X2) \wedge ( \\ & v13\_algstr\_0 X2) \wedge (v2\_rlvect\_1 X2) \wedge (v3\_rlvect\_1 X2) \wedge (v4\_rlvect\_1 \\ & X2) \wedge (v4\_vectsp\_2 X2 X0) \wedge (l1\_vectsp\_2 X2 X0)))))) \Rightarrow ((m1\_rmod\_2 \\ & X2 X0 X1) \Leftrightarrow ((r1\_tarski (u1\_struct\_0 X2) (u1\_struct\_0 X1)) \wedge ((k4\_struct\_0 \\ & X2 = k4\_struct\_0 X1) \wedge ((u1\_algstr\_0 X2 = k5\_relat\_1 (u1\_algstr\_0 \\ & X1) (k2\_zfmisc\_1 (u1\_struct\_0 X2) (u1\_struct\_0 X2))) \wedge (u1\_vectsp\_2 \\ & X0 X2 = k5\_relat\_1 (u1\_vectsp\_2 X0 X1) (k2\_zfmisc\_1 (u1\_struct\_0 \\ & X2) (u1\_struct\_0 X0))))))))) \end{aligned} \quad (9)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_group\_1 \\
& X0) \wedge ((v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge \\
& ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))))) \Rightarrow \\
& (\forall X1.((\neg v2\_struct\_0 X1) \wedge ((v13\_algstr\_0 X1) \wedge ((v2\_rlvect\_1 \\
& X1) \wedge ((v3\_rlvect\_1 X1) \wedge ((v4\_rlvect\_1 X1) \wedge ((v4\_vectsp\_2 X1 X0) \wedge \\
& (l1\_vectsp\_2 X1 X0))))))) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (k1\_zfmisc\_1 \\
& (u1\_struct\_0 X1))) \Rightarrow ((v1\_rmod\_2 X2 X0 X1) \Leftrightarrow ((\forall X3.(m1\_subset\_1 \\
& X3 (u1\_struct\_0 X1)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 (u1\_struct\_0 \\
& X1)) \Rightarrow (((X3 \in X2) \wedge (X4 \in X2)) \Rightarrow (k3\_rlvect\_1 X1 X3 X4 \in X2)))))) \wedge (\forall X3. \\
& (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 \\
& (u1\_struct\_0 X1)) \Rightarrow ((X4 \in X2) \Rightarrow (k5\_vectsp\_2 X0 X1 X3 X4 \in X2))))))))) \\
& \tag{10}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v13\_algstr\_0 X0) \wedge ((v3\_group\_1 \\
& X0) \wedge ((v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge \\
& ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (\forall X2.(( \\
& \neg v2\_struct\_0 X2) \wedge ((v13\_algstr\_0 X2) \wedge ((v2\_rlvect\_1 X2) \wedge ((v3\_rlvect\_1 \\
& X2) \wedge ((v4\_rlvect\_1 X2) \wedge ((v4\_vectsp\_2 X2 X0) \wedge (l1\_vectsp\_2 X2 X0))))))) \Rightarrow \\
& (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X2)) \Rightarrow (\forall X4.(m1\_rmod\_2 \\
& X4 X0 X2) \Rightarrow ((r1\_struct\_0 X4 X3) \Rightarrow (r1\_struct\_0 X4 (k5\_vectsp\_2 X0 \\
& X2 X1 X3)))))))))
\end{aligned}$$