

## t31\_ratfunc1

(TMYsmfSg8C51dHJZhu7gtGCfJADZMRKDxZw)

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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  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k13\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_ratfunc1 : \iota \Rightarrow \iota$  be given. Let  $k4\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $k6\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_group\_1 : \iota \Rightarrow o$  be given. Let  $k2\_polynom4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_polynom3 : \iota \Rightarrow \iota$  be given. Let  $l3\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $k8\_group\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l5\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $m1\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_xtuple\_0 : \iota \Rightarrow \iota$  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  $k5\_numbers : \iota$  be given. Let  $v1\_algseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $k2\_zfmisc\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k3\_ratfunc1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_tarski : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_polynom3 : \iota \Rightarrow \iota$  be given. Let  $l2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  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  $k11\_algstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_vectsp\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_vectsp\_1 : \iota \Rightarrow o$  be given. Assume the following.

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

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v1\_group\_1 X0) \wedge (l6\_algstr\_0 \\ & X0))) \Rightarrow (\forall X1. (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k2\_polynom4 \\ & X0 (k9\_polynom3 X0) X1 = k4\_struct\_0 X0)) \end{aligned} \quad (2)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0)\wedge(v5\_group\_1 X0)\wedge(l3\_algstr\_0 X0))\wedge((m1\_subset\_1 X1 (u1\_struct\_0 X0))\wedge(m1\_subset\_1 X2 (u1\_struct\_0 X0))))\Rightarrow(k8\_group\_1 X0 X1 X2 = k6\_algstr\_0 X0 X1 X2) \quad (3)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v7\_struct\_0 X0)\wedge(l5\_algstr\_0 X0))\wedge(m1\_ratfunc1 X1 X0))\Rightarrow(k5\_ratfunc1 X0 X1 = k2\_xtuple\_0 X1) \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.(((\neg v7\_struct\_0 X0)\wedge(l5\_algstr\_0 X0))\wedge(m1\_ratfunc1 X1 X0))\Rightarrow(k4\_ratfunc1 X0 X1 = k1\_xtuple\_0 X1) \quad (5)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((\neg v7\_struct\_0 X0)\wedge(l5\_algstr\_0 X0))\wedge((v1\_funct\_1 X1)\wedge((v1\_funct\_2 X1 k5\_numbers (u1\_struct\_0 X0))\wedge((v1\_algseq\_1 X1 X0)\wedge(m1\_subset\_1 X1 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0))))))))\wedge((v1\_funct\_1 X2)\wedge((v1\_funct\_2 X2 k5\_numbers (u1\_struct\_0 X0))\wedge((v1\_algseq\_1 X2 X0)\wedge((\neg v1\_ratfunc1 X2 X0)\wedge(m1\_subset\_1 X2 (k1\_zfmisc\_1 (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0))))))))))\Rightarrow(k3\_ratfunc1 X0 X1 X2 = k4\_tarski X1 X2) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.k2\_xtuple\_0 (k4\_tarski X0 X1) = X1 \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.k1\_xtuple\_0 (k4\_tarski X0 X1) = X0 \quad (8)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l5\_algstr\_0 X0))\Rightarrow((v1\_funct\_1 (k10\_polynom3 X0))\wedge((v1\_funct\_2 (k10\_polynom3 X0) k5\_numbers (u1\_struct\_0 X0))\wedge(v1\_algseq\_1 (k10\_polynom3 X0) X0))) \quad (9)$$

Assume the following.

$$\forall X0.((\neg v2\_struct\_0 X0)\wedge(l2\_struct\_0 X0))\Rightarrow((v1\_funct\_1 (k9\_polynom3 X0))\wedge((v1\_funct\_2 (k9\_polynom3 X0) k5\_numbers (u1\_struct\_0 X0))\wedge(v1\_algseq\_1 (k9\_polynom3 X0) X0))) \quad (10)$$

Assume the following.

$$\forall X0.((\neg v6\_struct\_0 X0)\wedge(l5\_algstr\_0 X0))\Rightarrow((v1\_funct\_1 (k10\_polynom3 X0))\wedge((v1\_funct\_2 (k10\_polynom3 X0) k5\_numbers (u1\_struct\_0 X0))\wedge(\neg v1\_ratfunc1 (k10\_polynom3 X0) X0))) \quad (11)$$

Assume the following.

$$\forall X0.(l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \quad (12)$$

Assume the following.

$$\forall X0.(l5\_algstr\_0 X0) \Rightarrow ((l4\_algstr\_0 X0) \wedge (l4\_struct\_0 X0)) \quad (13)$$

Assume the following.

$$\forall X0.(l4\_struct\_0 X0) \Rightarrow ((l2\_struct\_0 X0) \wedge (l3\_struct\_0 X0)) \quad (14)$$

Assume the following.

$$\forall X0.(l4\_algstr\_0 X0) \Rightarrow ((l3\_struct\_0 X0) \wedge (l3\_algstr\_0 X0)) \quad (15)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l2\_struct\_0 X0)) \Rightarrow ((v1\_funct\_1 \\ (k9\_polynom3 X0)) \wedge ((v1\_funct\_2 (k9\_polynom3 X0) k5\_numbers \\ (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (k9\_polynom3 X0) (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0)))))) \end{aligned} \quad (16)$$

Assume the following.

$$\forall X0.((\neg v6\_struct\_0 X0) \wedge (l5\_algstr\_0 X0)) \Rightarrow (m1\_ratfunc1 \\ (k7\_ratfunc1 X0) X0) \quad (17)$$

Assume the following.

$$\begin{aligned} \forall X0.\forall X1.\forall X2.(((\neg v2\_struct\_0 X0) \wedge ((v1\_group\_1 \\ X0) \wedge (l6\_algstr\_0 X0))) \wedge (((v1\_funct\_1 X1) \wedge (v1\_funct\_2 X1 k5\_numbers \\ (u1\_struct\_0 X0)) \wedge ((v1\_algseq\_1 X1 X0) \wedge (m1\_subset\_1 X1 (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0)))))) \wedge (m1\_subset\_1 \\ X2 (u1\_struct\_0 X0)))) \Rightarrow (m1\_subset\_1 (k2\_polynom4 X0 X1 X2) (u1\_struct\_0 \\ X0)) \end{aligned} \quad (18)$$

Assume the following.

$$\forall X0.\forall X1.((l5\_algstr\_0 X0) \wedge (m1\_subset\_1 X1 (u1\_struct\_0 \\ X0))) \Rightarrow (m1\_subset\_1 (k11\_algstr\_0 X0 X1) (u1\_struct\_0 X0)) \quad (19)$$

Assume the following.

$$\begin{aligned} \forall X0.((\neg v2\_struct\_0 X0) \wedge (l5\_algstr\_0 X0)) \Rightarrow ((v1\_funct\_1 \\ (k10\_polynom3 X0)) \wedge ((v1\_funct\_2 (k10\_polynom3 X0) k5\_numbers \\ (u1\_struct\_0 X0)) \wedge (m1\_subset\_1 (k10\_polynom3 X0) (k1\_zfmisc\_1 \\ (k2\_zfmisc\_1 k5\_numbers (u1\_struct\_0 X0)))))) \end{aligned} \quad (20)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge \\ & (v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 \\ & X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\ & (m1\_ratfunc1 X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0)) \Rightarrow (k13\_ratfunc1 X0 X1 X2 = k3\_vectsp\_1 X0 (k2\_polynom4 X0 (k4\_ratfunc1 \\ & X0 X1) X2) (k2\_polynom4 X0 (k5\_ratfunc1 X0 X1) X2)))) \end{aligned} \quad (21)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v6\_struct\_0 X0) \wedge (l5\_algstr\_0 X0)) \Rightarrow (k7\_ratfunc1 \\ & X0 = k3\_ratfunc1 X0 (k9\_polynom3 X0) (k10\_polynom3 X0)) \end{aligned} \quad (22)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 \\ & X0) \wedge ((v5\_group\_1 X0) \wedge ((v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ( \\ & l6\_algstr\_0 X0)))))) \Rightarrow (\forall X1.(m1\_subset\_1 X1 (u1\_struct\_0 \\ & X0)) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (k3\_vectsp\_1 \\ & X0 X1 X2 = k8\_group\_1 X0 X1 (k11\_algstr\_0 X0 X2)))) \end{aligned} \quad (23)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l4\_algstr\_0 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v4\_vectsp\_1 \\ & X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge (v1\_group\_1 X0))) \end{aligned} \quad (24)$$

Assume the following.

$$\forall X0.(l4\_struct\_0 X0) \Rightarrow ((\neg v6\_struct\_0 X0) \Rightarrow (\neg v7\_struct\_0 X0)) \quad (25)$$

Assume the following.

$$\begin{aligned} & \forall X0.(l6\_algstr\_0 X0) \Rightarrow (((\neg v2\_struct\_0 X0) \wedge (v5\_vectsp\_1 \\ & X0)) \Rightarrow ((\neg v2\_struct\_0 X0) \wedge ((v1\_vectsp\_1 X0) \wedge (v2\_vectsp\_1 X0)))) \end{aligned} \quad (26)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v33\_algstr\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge ( \\ & v4\_vectsp\_1 X0) \wedge ((v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 \\ & X0) \wedge ((v4\_rlvect\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_struct\_0 X0)) \Rightarrow (k13\_ratfunc1 X0 (k7\_ratfunc1 \\ & X0) X1 = k4\_struct\_0 X0)) \end{aligned}$$