

## t49\_rcomp\_3

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Let  $v1\_xreal\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k4\_topmetr : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_setfam\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_tops\_2 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_rcomp\_3 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_rcomp\_3 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k12\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_numbers : \iota$  be given. Let  $m2\_finseq\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_setfam\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_relset\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_setfam\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $np\_1 : \iota$  be given. Let  $k3\_finseq\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_xbool\_0 : \iota \Rightarrow o$  be given. Let  $k7\_partfun1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_seq\_4 : \iota \Rightarrow \iota$  be given. Let  $k4\_seq\_4 : \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_rcomp\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Assume the following.

$$\forall X0. \forall X1. \forall X2. ((v1\_xreal\_0 X0) \wedge ((v1\_xreal\_0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 (k4\_topmetr X0 X1))))))) \Rightarrow (\exists X3. m1\_rcomp\_3 X3 X0 X1 X2) \quad (1)$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. ((v1\_xreal\_0 X0) \wedge ((v1\_xreal\_0 X1) \wedge (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 (k4\_topmetr X0 X1))))))) \Rightarrow (\forall X3. (m1\_rcomp\_3 X3 X0 X1 X2) \Rightarrow (m2\_finseq\_1 X3 (k9\_setfam\_1 k1\_numbers))) \quad (2)$$

Assume the following.

$$\begin{aligned}
& \forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 (k4\_topmetr \\
& X0 X1)))))) \Rightarrow (((m1\_setfam\_1 X2 (u1\_struct\_0 (k4\_topmetr X0 X1))) \wedge \\
& ((v1\_tops\_2 X2 (k4\_topmetr X0 X1)) \wedge ((v1\_rcomp\_3 X2 (k4\_topmetr \\
& X0 X1)) \wedge (r1\_xxreal\_0 X0 X1)))))) \Rightarrow (\forall X3.(m2\_finseq\_1 X3 (k9\_setfam\_1 \\
& k1\_numbers)) \Rightarrow ((m1\_rcomp\_3 X3 X0 X1 X2) \Leftrightarrow ((r1\_tarski (k2\_relset\_1 \\
& (k9\_setfam\_1 k1\_numbers) X3) X2) \wedge ((k5\_setfam\_1 k1\_numbers (k2\_relset\_1 \\
& (k9\_setfam\_1 k1\_numbers) X3) = k1\_rcomp\_1 X0 X1) \wedge ((\forall X4. \\
& (v7\_ordinal1 X4) \Rightarrow ((r1\_xxreal\_0 np\_1 X4) \Rightarrow ((\neg(r1\_xxreal\_0 X4 \\
& (k3\_finseq\_1 X3)) \wedge (v1\_xboole\_0 (k7\_partfun1 (k9\_setfam\_1 k1\_numbers) \\
& X3 X4))) \wedge (((r1\_xxreal\_0 (k1\_nat\_1 X4 np\_1) (k3\_finseq\_1 X3)) \Rightarrow \\
& ((r1\_xxreal\_0 (k5\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 k1\_numbers) \\
& X3 X4)) (k5\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 k1\_numbers) X3 (k1\_nat\_1 \\
& X4 np\_1)))))) \wedge ((r1\_xxreal\_0 (k4\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 \\
& k1\_numbers) X3 X4)) (k4\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 k1\_numbers) \\
& X3 (k1\_nat\_1 X4 np\_1)))))) \wedge (\neg r1\_xxreal\_0 (k4\_seq\_4 (k7\_partfun1 \\
& (k9\_setfam\_1 k1\_numbers) X3 X4)) (k5\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 \\
& k1\_numbers) X3 (k1\_nat\_1 X4 np\_1)))))) \wedge ((r1\_xxreal\_0 (k1\_nat\_1 \\
& X4 np\_2) (k3\_finseq\_1 X3)) \Rightarrow (r1\_xxreal\_0 (k4\_seq\_4 (k7\_partfun1 \\
& (k9\_setfam\_1 k1\_numbers) X3 X4)) (k5\_seq\_4 (k7\_partfun1 (k9\_setfam\_1 \\
& k1\_numbers) X3 (k1\_nat\_1 X4 np\_2)))))) \wedge (((k1\_rcomp\_1 X0 X1 \in \\
& X2) \Rightarrow (X3 = k12\_finseq\_1 (k1\_zfmisc\_1 k1\_numbers) (k1\_rcomp\_1 X0 \\
& X1))) \wedge ((\neg k1\_rcomp\_1 X0 X1 \in X2) \Rightarrow ((\exists X4.(v1\_xreal\_0 X4) \wedge \\
& ((\neg r1\_xxreal\_0 X4 X0) \wedge ((r1\_xxreal\_0 X4 X1) \wedge (k1\_funct\_1 X3 np\_1 = \\
& k3\_rcomp\_1 X0 X4)))) \wedge ((\exists X4.(v1\_xreal\_0 X4) \wedge ((r1\_xxreal\_0 \\
& X0 X4) \wedge ((\neg r1\_xxreal\_0 X1 X4) \wedge (k1\_funct\_1 X3 (k3\_finseq\_1 X3) = \\
& k4\_rcomp\_1 X4 X1)))) \wedge (\forall X4.(v7\_ordinal1 X4) \Rightarrow (\neg(\neg r1\_xxreal\_0 \\
& X4 np\_1) \wedge ((\neg r1\_xxreal\_0 (k3\_finseq\_1 X3) X4) \wedge (\forall X5.(v1\_xreal\_0 \\
& X5) \Rightarrow (\forall X6.(v1\_xreal\_0 X6) \Rightarrow (\neg(r1\_xxreal\_0 X0 X5) \wedge ((\neg r1\_xxreal\_0 \\
& X6 X5) \wedge ((r1\_xxreal\_0 X6 X1) \wedge (k1\_funct\_1 X3 X4 = k2\_rcomp\_1 X5 X6))))))))))))))))) \\
& \tag{3}
\end{aligned}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.(v1\_xreal\_0 X0) \Rightarrow (\forall X1.(v1\_xreal\_0 X1) \Rightarrow (\forall X2. \\
& (m1\_subset\_1 X2 (k1\_zfmisc\_1 (k1\_zfmisc\_1 (u1\_struct\_0 (k4\_topmetr \\
& X0 X1)))))) \Rightarrow (((m1\_setfam\_1 X2 (u1\_struct\_0 (k4\_topmetr X0 X1))) \wedge \\
& ((v1\_tops\_2 X2 (k4\_topmetr X0 X1)) \wedge ((v1\_rcomp\_3 X2 (k4\_topmetr \\
& X0 X1)) \wedge ((r1\_xxreal\_0 X0 X1) \wedge (k1\_rcomp\_1 X0 X1 \in X2)))))) \Rightarrow (m1\_rcomp\_3 \\
& (k12\_finseq\_1 (k1\_zfmisc\_1 k1\_numbers) (k1\_rcomp\_1 X0 X1)) X0 \\
& X1 X2)))
\end{aligned}$$