

# t74\_scmpds\_6 (TMRbraCiMdKLLy- WfKa3Yqk6oqoZJRoUVkAp)

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Let  $v1\_relat\_1 : \iota \Rightarrow o$  be given. Let  $v4\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k5\_numbers : \iota$  be given. Let  $v5\_relat\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_scmpds\_2 : \iota$  be given. Let  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_partfun1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $v5\_funct\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k2\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $v5\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_afinsq\_1 : \iota \Rightarrow o$  be given. Let  $v2\_compos\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_scmpds\_4 : \iota \Rightarrow o$  be given. Let  $v3\_scmpds\_4 : \iota \Rightarrow o$  be given. Let  $v1\_ami\_2 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $r1\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r2\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k7\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $k1\_zfmisc\_1 : \iota \Rightarrow \iota$  be given. Let  $v1\_scmpds\_4 : \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v3\_ordinal1 : \iota \Rightarrow o$  be given. Let  $v2\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $l1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_compos\_1 : \iota \Rightarrow o$  be given. Let  $v1\_setfam\_1 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 :$

$\iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge ((v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X1 np\_2 k1\_scmpds\_2 k6\_numbers)))))) \Rightarrow \\
& (\forall X2.((\neg v1\_xboole\_0 X2) \wedge ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ( \\
& (v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge (v1\_afinsq\_1 X2)))))) \Rightarrow ( \\
& \forall X3.((\neg v1\_xboole\_0 X3) \wedge ((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\
& X3 k5\_numbers) \wedge ((v5\_relat\_1 X3 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ( \\
& (v1\_funct\_1 X3) \wedge ((v1\_finset\_1 X3) \wedge ((v1\_afinsq\_1 X3) \wedge ((v2\_compos\_1 \\
& X3 k1\_scmpds\_2) \wedge (v3\_scmpds\_4 X3)))))) \Rightarrow (\forall X4.((v1\_ami\_2 \\
& X4) \wedge (m1\_subset\_1 X4 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow (\forall X5. \\
& (v1\_int\_1 X5) \Rightarrow (((r1\_xreal\_0 (k1\_funct\_1 X1 (k2\_scmpds\_2 (k1\_funct\_1 \\
& X1 X4) X5)) k6\_numbers) \wedge ((r1\_scmpds\_6 X3 X1 X0) \wedge (r2\_scmpds\_6 X3 \\
& X1 X0))) \Rightarrow (k6\_scmpds\_4 (k3\_scmpds\_6 X4 X5 X2 X3) X1 X0 = k1\_funct\_4 \\
& (k6\_scmpds\_4 X3 X1 X0) (k7\_memstr\_0 np\_2 k1\_scmpds\_2 (k2\_nat\_1 \\
& (k2\_nat\_1 (k5\_card\_1 X2) (k5\_card\_1 X3) np\_2)))))))))
\end{aligned} \tag{1}$$

Assume the following.

$$\forall X0. \forall X1. \forall X2. \neg (X0 \in X1) \wedge ((m1\_subset\_1 X1 (k1\_zfmisc\_1 X2)) \wedge (v1\_xboole\_0 X2)) \tag{2}$$

Assume the following.

$$\forall X0. \forall X1. (m1\_subset\_1 X0 X1) \Rightarrow ((v1\_xboole\_0 X1) \vee (X0 \in X1)) \tag{3}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 \\
& X0 k5\_numbers) \wedge ((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ( \\
& (v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow ( \\
& (v2\_scmpds\_4 X0) \Leftrightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmpds\_2)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ( \\
& (v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow (r2\_scmpds\_6 \\
& X0 X1 X2)))
\end{aligned} \tag{4}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge ((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 \\
& X0 k5\_numbers) \wedge ((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmpds\_2)) \wedge \\
& (v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow ( \\
& (v1\_scmpds\_4 X0) \Leftrightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge (v1\_partfun1 X1 (u1\_struct\_0 \\
& k1\_scmpds\_2)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 \\
& X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmpds\_2)) \wedge \\
& (v1\_funct\_1 X2) \wedge (v1\_partfun1 X2 k5\_numbers)))))) \Rightarrow (r1\_scmpds\_6 \\
& X0 X1 X2)))
\end{aligned} \tag{5}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((v1\_ami\_2 X0) \wedge (m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow \\
& (\forall X1.(m1\_subset\_1 X1 k5\_numbers) \Rightarrow (\neg X0 \in k9\_xtuple\_0 (k7\_memstr\_0 \\
& np\_2 k1\_scmpds\_2 X1)))
\end{aligned} \tag{6}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1.((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow (\forall X2. \\
& ((v1\_relat\_1 X2) \wedge (v1\_funct\_1 X2)) \Rightarrow ((\neg X0 \in k9\_xtuple\_0 X1) \Rightarrow (k1\_funct\_1 \\
& (k1\_funct\_4 X2 X1) X0 = k1\_funct\_1 X2 X0)))
\end{aligned} \tag{7}$$

Assume the following.

$$\begin{aligned}
& ((v2\_xxreal\_0 np\_2) \wedge (m2\_subset\_1 np\_2 k1\_numbers k5\_numbers)) \wedge \\
& ((m1\_subset\_1 np\_2 k5\_numbers) \wedge (m1\_subset\_1 np\_2 k1\_numbers))
\end{aligned} \tag{8}$$

Assume the following.

$$\neg v1\_xboole\_0 np\_2 \tag{9}$$

Assume the following.

$$\begin{aligned}
& ((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge \\
& ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers))
\end{aligned} \tag{10}$$

Assume the following.

$$\begin{aligned}
& \forall X0. \forall X1.((\neg v1\_xboole\_0 X0) \wedge ((\neg v1\_xboole\_0 X1) \wedge \\
& (m1\_subset\_1 X1 (k1\_zfmisc\_1 X0)))) \Rightarrow (\forall X2.(m2\_subset\_1 \\
& X2 X0 X1) \Leftrightarrow (m1\_subset\_1 X2 X1))
\end{aligned} \tag{11}$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \tag{12}$$

Assume the following.

$$(\neg v1\_xboole\_0 k4\_ordinal1) \wedge (v3\_ordinal1 k4\_ordinal1) \tag{13}$$

Assume the following.

$$(v2\_memstr\_0\ k1\_scmpds\_2\ np\_2) \wedge ((v3\_memstr\_0\ k1\_scmpds\_2\ np\_2) \wedge (v1\_extpro\_1\ k1\_scmpds\_2\ np\_2)) \quad (14)$$

Assume the following.

$$(\neg v2\_struct\_0\ k1\_scmpds\_2) \wedge (v1\_extpro\_1\ k1\_scmpds\_2\ np\_2) \quad (15)$$

Assume the following.

$$\forall X0.\forall X1.(l1\_extpro\_1\ X1\ X0) \Rightarrow ((l1\_memstr\_0\ X1\ X0) \wedge (l1\_compos\_1\ X1)) \quad (16)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.((\neg v1\_setfam\_1\ X0) \wedge (((\neg v2\_struct\_0\ X1) \wedge ((v2\_memstr\_0\ X1\ X0) \wedge ((v3\_memstr\_0\ X1\ X0) \wedge (l1\_memstr\_0\ X1\ X0)))) \wedge (v7\_ordinal1\ X2))) \Rightarrow ((v1\_relat\_1\ (k7\_memstr\_0\ X0\ X1\ X2)) \wedge ((v4\_relat\_1\ (k7\_memstr\_0\ X0\ X1\ X2)\ (u1\_struct\_0\ X1)) \wedge ((v1\_funct\_1\ (k7\_memstr\_0\ X0\ X1\ X2)) \wedge (v5\_funct\_1\ (k7\_memstr\_0\ X0\ X1\ X2)\ (k2\_memstr\_0\ X0\ X1)))))) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.(((\neg v1\_xboole\_0\ X0) \wedge ((v1\_relat\_1\ X0) \wedge ((v4\_relat\_1\ X0\ k5\_numbers) \wedge ((v5\_relat\_1\ X0\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ X0) \wedge ((v1\_finset\_1\ X0) \wedge (v1\_afinsq\_1\ X0)))))) \wedge ((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1\ X1\ (u1\_struct\_0\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ X1) \wedge ((v5\_funct\_1\ X1\ (k2\_memstr\_0\ np\_2\ k1\_scmpds\_2)) \wedge (v1\_partfun1\ X1\ (u1\_struct\_0\ k1\_scmpds\_2)))))) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1\ X2\ k5\_numbers) \wedge ((v5\_relat\_1\ X2\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ X2) \wedge (v1\_partfun1\ X2\ k5\_numbers)))))) \Rightarrow ((v1\_relat\_1\ (k6\_scmpds\_4\ X0\ X1\ X2)) \wedge ((v4\_relat\_1\ (k6\_scmpds\_4\ X0\ X1\ X2)\ (u1\_struct\_0\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ (k6\_scmpds\_4\ X0\ X1\ X2)) \wedge ((v5\_funct\_1\ (k6\_scmpds\_4\ X0\ X1\ X2)\ (k2\_memstr\_0\ np\_2\ k1\_scmpds\_2)) \wedge (v1\_partfun1\ (k6\_scmpds\_4\ X0\ X1\ X2)\ (u1\_struct\_0\ k1\_scmpds\_2)))))) \end{aligned} \quad (18)$$

Assume the following.

$$m1\_subset\_1\ k5\_numbers\ (k1\_zfmisc\_1\ k1\_numbers) \quad (19)$$

Assume the following.

$$\forall X0.(v1\_finset\_1\ X0) \Rightarrow (m1\_subset\_1\ (k5\_card\_1\ X0)\ k4\_ordinal1) \quad (20)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1\ X0\ k5\_numbers) \wedge (v7\_ordinal1\ X1)) \Rightarrow (m2\_subset\_1\ (k2\_nat\_1\ X0\ X1)\ k1\_numbers\ k5\_numbers) \quad (21)$$

Assume the following.

$$(v1\_extpro\_1\ k1\_scmpds\_2\ np\_2) \wedge (l1\_extpro\_1\ k1\_scmpds\_2\ np\_2) \quad (22)$$

Assume the following.

$$\forall X0.(m1\_subset\_1\ X0\ k4\_ordinal1) \Rightarrow (v7\_ordinal1\ X0) \quad (23)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0\ X0) \wedge ((v1\_relat\_1\ X0) \wedge ((v4\_relat\_1 \\ & X0\ k5\_numbers) \wedge ((v5\_relat\_1\ X0\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ( \\ & (v1\_funct\_1\ X0) \wedge ((v1\_finset\_1\ X0) \wedge ((v1\_afinsq\_1\ X0) \wedge (v2\_scmpds\_4 \\ & X0)))))) \Rightarrow ((\neg v1\_xboole\_0\ X0) \wedge ((v1\_relat\_1\ X0) \wedge ((v4\_relat\_1 \\ & X0\ k5\_numbers) \wedge ((v5\_relat\_1\ X0\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ( \\ & (v1\_funct\_1\ X0) \wedge ((v1\_finset\_1\ X0) \wedge ((v1\_afinsq\_1\ X0) \wedge (v1\_scmpds\_4 \\ & X0))))))))) \end{aligned} \quad (24)$$

Assume the following.

$$\forall X0.((\neg v1\_xboole\_0\ X0) \wedge (v7\_ordinal1\ X0)) \Rightarrow ((\neg v1\_xboole\_0\ X0) \wedge ((v7\_ordinal1\ X0) \wedge (\neg v1\_setfam\_1\ X0))) \quad (25)$$

### Theorem 1

$$\begin{aligned} & \forall X0.((v1\_relat\_1\ X0) \wedge ((v4\_relat\_1\ X0\ k5\_numbers) \wedge ((v5\_relat\_1 \\ & X0\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ X0) \wedge (v1\_partfun1 \\ & X0\ k5\_numbers)))) \Rightarrow (\forall X1.((v1\_relat\_1\ X1) \wedge ((v4\_relat\_1 \\ & X1\ (u1\_struct\_0\ k1\_scmpds\_2)) \wedge ((v1\_funct\_1\ X1) \wedge ((v5\_funct\_1 \\ & X1\ (k2\_memstr\_0\ np\_2\ k1\_scmpds\_2)) \wedge ((v1\_partfun1\ X1\ (u1\_struct\_0 \\ & k1\_scmpds\_2)) \wedge (v5\_memstr\_0\ X1\ np\_2\ k1\_scmpds\_2\ k6\_numbers)))))) \Rightarrow \\ & (\forall X2.((\neg v1\_xboole\_0\ X2) \wedge ((v1\_relat\_1\ X2) \wedge ((v4\_relat\_1 \\ & X2\ k5\_numbers) \wedge ((v5\_relat\_1\ X2\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ( \\ & (v1\_funct\_1\ X2) \wedge ((v1\_finset\_1\ X2) \wedge (v1\_afinsq\_1\ X2)))))) \Rightarrow ( \\ & \forall X3.((\neg v1\_xboole\_0\ X3) \wedge ((v1\_relat\_1\ X3) \wedge ((v4\_relat\_1 \\ & X3\ k5\_numbers) \wedge ((v5\_relat\_1\ X3\ (u1\_compos\_1\ k1\_scmpds\_2)) \wedge ( \\ & (v1\_funct\_1\ X3) \wedge ((v1\_finset\_1\ X3) \wedge ((v1\_afinsq\_1\ X3) \wedge ((v2\_compos\_1 \\ & X3\ k1\_scmpds\_2) \wedge ((v2\_scmpds\_4\ X3) \wedge (v3\_scmpds\_4\ X3)))))))))) \Rightarrow \\ & (\forall X4.((v1\_ami\_2\ X4) \wedge (m1\_subset\_1\ X4\ (u1\_struct\_0\ k1\_scmpds\_2))) \Rightarrow \\ & (\forall X5.((v1\_ami\_2\ X5) \wedge (m1\_subset\_1\ X5\ (u1\_struct\_0\ k1\_scmpds\_2))) \Rightarrow \\ & (\forall X6.(v1\_int\_1\ X6) \Rightarrow ((r1\_xreal\_0\ (k1\_funct\_1\ X1\ (k2\_scmpds\_2 \\ & (k1\_funct\_1\ X1\ X4)\ X6))\ k6\_numbers) \Rightarrow (k1\_funct\_1\ (k6\_scmpds\_4 \\ & (k3\_scmpds\_6\ X4\ X6\ X2\ X3)\ X1\ X0)\ X5 = k1\_funct\_1\ (k6\_scmpds\_4\ X3\ X1 \\ & X0)\ X5)))))) \end{aligned}$$