

# t26\_scmpds\_7 (TMcrRGy- HoLth9V3jJGWkoFvH2P7RtnK37ZZ)

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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  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_afinsq\_1 : \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  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  $m2\_subset\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k1\_numbers : \iota$  be given. Let  $r2\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k8\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k10\_compos\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $v2\_xxreal\_0 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  be given. Let  $v1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v3\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  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  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v1\_setfam\_1 : \iota \Rightarrow o$  be given. Let  $l1\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $l1\_compos\_1 : \iota \Rightarrow o$  be given. Let  $r1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_2) \wedge (m2\_subset\_1 \ np\_2 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_2 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_2 \ k1\_numbers)) \end{aligned} \quad (1)$$

Assume the following.

$$\neg v1\_xboole\_0 \ np\_2 \quad (2)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_relat\_1 \ X1) \wedge ((v4\_relat\_1 \\ & X1 \ X0) \wedge (v1\_funct\_1 \ X1))) \wedge ((v1\_relat\_1 \ X2) \wedge ((v4\_relat\_1 \ X2 \ X0) \wedge \\ & (v1\_funct\_1 \ X2)))) \Rightarrow ((v1\_relat\_1 \ (k1\_funct\_4 \ X1 \ X2)) \wedge ((v4\_relat\_1 \\ & (k1\_funct\_4 \ X1 \ X2) \ X0) \wedge (v1\_funct\_1 \ (k1\_funct\_4 \ X1 \ X2)))) \end{aligned} \quad (4)$$

Assume the following.

$$(v1\_extpro\_1 k1\_scmpds\_2 np\_2) \wedge (v3\_extpro\_1 k1\_scmpds\_2 np\_2) \quad (5)$$

Assume the following.

$$(v2\_memstr\_0 k1\_scmpds\_2 np\_2) \wedge ((v3\_memstr\_0 k1\_scmpds\_2 np\_2) \wedge (v1\_extpro\_1 k1\_scmpds\_2 np\_2)) \quad (6)$$

Assume the following.

$$(\neg v2\_struct\_0 k1\_scmpds\_2) \wedge (v1\_extpro\_1 k1\_scmpds\_2 np\_2) \quad (7)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1\_setfam\_1 X0) \wedge ((\neg v2\_struct\_0 \\ & X1) \wedge ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge (l1\_memstr\_0 X1 \\ & X0)))) \wedge ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 (u1\_struct\_0 X1)) \wedge \\ & (v1\_funct\_1 X2) \wedge ((v5\_funct\_1 X2 (k2\_memstr\_0 X0 X1)) \wedge (v1\_partfun1 \\ & X2 (u1\_struct\_0 X1)))))) \Rightarrow ((v1\_relat\_1 (k8\_memstr\_0 X0 X1 X2)) \wedge \\ & ((v4\_relat\_1 (k8\_memstr\_0 X0 X1 X2) (u1\_struct\_0 X1)) \wedge ((v1\_funct\_1 \\ & (k8\_memstr\_0 X0 X1 X2)) \wedge ((v5\_funct\_1 (k8\_memstr\_0 X0 X1 X2) (k2\_memstr\_0 \\ & X0 X1)) \wedge (v1\_partfun1 (k8\_memstr\_0 X0 X1 X2) (u1\_struct\_0 X1)))))) \end{aligned} \quad (8)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. (((v1\_relat\_1 X1) \wedge ((v5\_relat\_1 \\ & X1 X0) \wedge (v1\_funct\_1 X1))) \wedge ((v1\_relat\_1 X2) \wedge ((v5\_relat\_1 X2 X0) \wedge \\ & (v1\_funct\_1 X2)))) \Rightarrow ((v1\_relat\_1 (k1\_funct\_4 X1 X2)) \wedge ((v5\_relat\_1 \\ & (k1\_funct\_4 X1 X2) X0) \wedge (v1\_funct\_1 (k1\_funct\_4 X1 X2)))) \end{aligned} \quad (9)$$

Assume the following.

$$\forall X0. \forall X1. (l1\_extpro\_1 X1 X0) \Rightarrow ((l1\_memstr\_0 X1 X0) \wedge (l1\_compos\_1 X1)) \quad (10)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((\neg v1\_setfam\_1 X0) \wedge ((\neg v2\_struct\_0 \\ & X1) \wedge ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge (l1\_memstr\_0 X1 \\ & X0)))) \wedge ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 (u1\_struct\_0 X1)) \wedge \\ & (v1\_funct\_1 X2) \wedge ((v5\_funct\_1 X2 (k2\_memstr\_0 X0 X1)))))) \Rightarrow ((v1\_relat\_1 \\ & (k8\_memstr\_0 X0 X1 X2)) \wedge ((v4\_relat\_1 (k8\_memstr\_0 X0 X1 X2) (u1\_struct\_0 \\ & X1)) \wedge ((v1\_funct\_1 (k8\_memstr\_0 X0 X1 X2)) \wedge ((v5\_funct\_1 (k8\_memstr\_0 \\ & X0 X1 X2) (k2\_memstr\_0 X0 X1)))))) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.\forall X2.\forall X3.(((\neg v1\_xboole\_0 \\ & X0)\wedge(\neg v1\_setfam\_1 X0))\wedge(((\neg v2\_struct\_0 X1)\wedge((v2\_memstr\_0 X1 \\ & X0)\wedge((v3\_memstr\_0 X1 X0)\wedge((v3\_extpro\_1 X1 X0)\wedge(l1\_extpro\_1 X1 \\ & X0))))))\wedge(((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 k5\_numbers)\wedge((v5\_relat\_1 \\ & X2 (u1\_compos\_1 X1))\wedge(v1\_funct\_1 X2))))\wedge((v1\_relat\_1 X3)\wedge(( \\ & v4\_relat\_1 X3 (u1\_struct\_0 X1))\wedge((v1\_funct\_1 X3)\wedge((v5\_funct\_1 \\ & X3 (k2\_memstr\_0 X0 X1))\wedge(v1\_partfun1 X3 (u1\_struct\_0 X1))))))))))\Rightarrow \\ & (m2\_subset\_1 (k8\_extpro\_1 X0 X1 X2 X3) k1\_numbers k5\_numbers) \end{aligned} \quad (12)$$

Assume the following.

$$(v1\_extpro\_1 k1\_scmpds\_2 np\_2)\wedge(l1\_extpro\_1 k1\_scmpds\_2 np\_2) \quad (13)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.(((v1\_relat\_1 X0)\wedge(v1\_funct\_1 X0))\wedge(( \\ & v1\_relat\_1 X1)\wedge(v1\_funct\_1 X1)))\Rightarrow((v1\_relat\_1 (k1\_funct\_4 X0 \\ & X1))\wedge(v1\_funct\_1 (k1\_funct\_4 X0 X1))) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & \forall X0.\forall X1.((l1\_compos\_1 X0)\wedge((v1\_relat\_1 X1)\wedge(( \\ & v4\_relat\_1 X1 k5\_numbers)\wedge((v5\_relat\_1 X1 (u1\_compos\_1 X0))\wedge \\ & ((v1\_funct\_1 X1)\wedge((v1\_finset\_1 X1)\wedge(v1\_afinsq\_1 X1)))))))\Rightarrow \\ & ((v1\_relat\_1 (k10\_compos\_1 X0 X1))\wedge((v4\_relat\_1 (k10\_compos\_1 \\ & X0 X1) k5\_numbers)\wedge((v5\_relat\_1 (k10\_compos\_1 X0 X1) (u1\_compos\_1 \\ & X0))\wedge((v1\_funct\_1 (k10\_compos\_1 X0 X1))\wedge(v1\_finset\_1 (k10\_compos\_1 \\ & X0 X1)))))) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & \forall X0.((\neg v1\_xboole\_0 X0)\wedge((v1\_relat\_1 X0)\wedge((v4\_relat\_1 \\ & X0 k5\_numbers)\wedge((v5\_relat\_1 X0 (u1\_compos\_1 k1\_scmpds\_2))\wedge( \\ & (v1\_funct\_1 X0)\wedge((v1\_finset\_1 X0)\wedge(v1\_afinsq\_1 X0)))))))\Rightarrow( \\ & \forall X1.((v1\_relat\_1 X1)\wedge((v4\_relat\_1 X1 (u1\_struct\_0 k1\_scmpds\_2))\wedge \\ & ((v1\_funct\_1 X1)\wedge((v5\_funct\_1 X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2))\wedge \\ & (v1\_partfun1 X1 (u1\_struct\_0 k1\_scmpds\_2))))))\Rightarrow(\forall X2. \\ & ((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 k5\_numbers)\wedge((v5\_relat\_1 X2 \\ & (u1\_compos\_1 k1\_scmpds\_2))\wedge((v1\_funct\_1 X2)\wedge(v1\_partfun1 X2 \\ & k5\_numbers))))))\Rightarrow((r2\_scmpds\_6 X0 X1 X2)\Leftrightarrow(r1\_extpro\_1 np\_2 k1\_scmpds\_2 \\ & (k1\_funct\_4 X2 (k10\_compos\_1 k1\_scmpds\_2 X0)) (k8\_memstr\_0 np\_2 \\ & k1\_scmpds\_2 X1)))) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (\neg v1\_setfam\_1 X0)) \Rightarrow (\forall X1. \\
& ((\neg v2\_struct\_0 X1) \wedge ((v2\_memstr\_0 X1 X0) \wedge ((v3\_memstr\_0 X1 X0) \wedge \\
& ((v3\_extpro\_1 X1 X0) \wedge (l1\_extpro\_1 X1 X0)))))) \Rightarrow (\forall X2.((v1\_relat\_1 \\
& X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 (u1\_compos\_1 \\
& X1)) \wedge (v1\_funct\_1 X2)))))) \Rightarrow (\forall X3.((v1\_relat\_1 X3) \wedge ((v4\_relat\_1 \\
& X3 (u1\_struct\_0 X1)) \wedge ((v1\_funct\_1 X3) \wedge ((v5\_funct\_1 X3 (k2\_memstr\_0 \\
& X0 X1)) \wedge (v1\_partfun1 X3 (u1\_struct\_0 X1)))))) \Rightarrow ((r1\_extpro\_1 \\
& X0 X1 X2 X3) \Rightarrow (\forall X4.(m2\_subset\_1 X4 k1\_numbers k5\_numbers) \Rightarrow \\
& ((X4 = k8\_extpro\_1 X0 X1 X2 X3) \Leftrightarrow ((k3\_extpro\_1 X0 X1 X2 (k5\_extpro\_1 \\
& X0 X1 X2 X3 X4) = k2\_compos\_1 X1) \wedge (\forall X5.(m2\_subset\_1 X5 k1\_numbers \\
& k5\_numbers) \Rightarrow ((k3\_extpro\_1 X0 X1 X2 (k5\_extpro\_1 X0 X1 X2 X3 X5) = \\
& k2\_compos\_1 X1) \Rightarrow (r1\_xreal\_0 X4 X5))))))))))
\end{aligned} \tag{17}$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \tag{18}$$

Assume the following.

$$\forall X0.(\neg v1\_setfam\_1 X0) \Rightarrow (\neg v1\_xboole\_0 X0) \tag{19}$$

Assume the following.

$$\begin{aligned}
& \forall X0.((\neg v1\_xboole\_0 X0) \wedge (v7\_ordinal1 X0)) \Rightarrow ((\neg v1\_xboole\_0 \\
& X0) \wedge ((v7\_ordinal1 X0) \wedge (\neg v1\_setfam\_1 X0)))
\end{aligned} \tag{20}$$

### Theorem 1

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& X0 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& X0 k5\_numbers)))))) \Rightarrow (\forall X1.((\neg v1\_xboole\_0 X1) \wedge ((v1\_relat\_1 \\
& X1) \wedge ((v4\_relat\_1 X1 k5\_numbers) \wedge ((v5\_relat\_1 X1 (u1\_compos\_1 \\
& k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v1\_finset\_1 X1) \wedge (v1\_afinsq\_1 \\
& X1)))))) \Rightarrow (\forall X2.((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 (u1\_struct\_0 \\
& k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v5\_funct\_1 X2 (k2\_memstr\_0 \\
& np\_2 k1\_scmpds\_2)) \wedge (v1\_partfun1 X2 (u1\_struct\_0 k1\_scmpds\_2)))))) \Rightarrow \\
& (\forall X3.(m2\_subset\_1 X3 k1\_numbers k5\_numbers) \Rightarrow (\neg (r2\_scmpds\_6 \\
& X1 X2 X0) \wedge ((\neg r1\_xreal\_0 (k8\_extpro\_1 np\_2 k1\_scmpds\_2 (k1\_funct\_4 \\
& X0 (k10\_compos\_1 k1\_scmpds\_2 X1)) (k8\_memstr\_0 np\_2 k1\_scmpds\_2 \\
& X2)) X3) \wedge (k3\_extpro\_1 np\_2 k1\_scmpds\_2 (k1\_funct\_4 X0 (k10\_compos\_1 \\
& k1\_scmpds\_2 X1)) (k5\_extpro\_1 np\_2 k1\_scmpds\_2 (k1\_funct\_4 X0 \\
& (k10\_compos\_1 k1\_scmpds\_2 X1)) (k8\_memstr\_0 np\_2 k1\_scmpds\_2 \\
& X2) X3) = k2\_compos\_1 k1\_scmpds\_2))))))
\end{aligned}$$