

# l2\_scpqsort

(TMU614aVjb2YdVB5K2sPY4dW3D7a7BUrRyF)

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Let  $v1\_ami\_2 : \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_scmpds\_2 : \iota$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. 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  $v1\_funct\_1 : \iota \Rightarrow o$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_afinsq\_1 : \iota \Rightarrow o$  be given. Let  $k2\_scmpds\_8 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k8\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k3\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_scmpds\_2 : \iota \Rightarrow \iota$  be given. Let  $k4\_xcmplx\_0 : \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  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  $k4\_ordinal1 : \iota$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k2\_xcmplx\_0 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $v1\_xcmplx\_0 : \iota \Rightarrow o$  be given. Assume the following.

$$\begin{aligned} & \forall X0.(m1\_subset\_1 X0 (u1\_compos\_1 k1\_scmpds\_2)) \Rightarrow (\forall X1. \\ & (m1\_subset\_1 X1 (u1\_compos\_1 k1\_scmpds\_2)) \Rightarrow (\forall X2. ((\neg v1\_xboole\_0 \\ & X2) \wedge ((v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 \\ & X2 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 \\ & X2) \wedge (v1\_afinsq\_1 X2)))))) \Rightarrow (k3\_scmpds\_4 (k2\_scmpds\_4 X0 X2) \\ & X1 = k2\_scmpds\_4 X0 (k3\_scmpds\_4 X2 X1)))) \end{aligned} \quad (1)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 np\_2) \wedge (m2\_subset\_1 np\_2 k1\_numbers k5\_numbers)) \wedge \\ & ((m1\_subset\_1 np\_2 k5\_numbers) \wedge (m1\_subset\_1 np\_2 k1\_numbers)) \end{aligned} \quad (2)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 np\_1) \wedge (m2\_subset\_1 np\_1 k1\_numbers k5\_numbers)) \wedge \\ & ((m1\_subset\_1 np\_1 k5\_numbers) \wedge (m1\_subset\_1 np\_1 k1\_numbers)) \end{aligned} \quad (3)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (4)$$

Assume the following.

$$\forall X0.\forall X1.((m1\_subset\_1 X0 k5\_numbers)\wedge(v7\_ordinal1 X1))\Rightarrow(k2\_nat\_1 X0 X1 = k2\_xcmplx\_0 X0 X1) \quad (5)$$

Assume the following.

$$\forall X0.(v1\_int\_1 X0)\Rightarrow((v1\_xcmplx\_0 (k4\_xcmplx\_0 X0))\wedge(v1\_int\_1 (k4\_xcmplx\_0 X0))) \quad (6)$$

Assume the following.

$$\forall X0.\forall X1.((v1\_int\_1 X0)\wedge(v1\_int\_1 X1))\Rightarrow(v1\_int\_1 (k2\_xcmplx\_0 X0 X1)) \quad (7)$$

Assume the following.

$$\forall X0.\forall X1.\forall X2.(((v1\_ami\_2 X0)\wedge(m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmpds\_2)))\wedge((v1\_int\_1 X1)\wedge(v1\_int\_1 X2)))\Rightarrow (m1\_subset\_1 (k8\_scmpds\_2 X0 X1 X2) (u1\_compos\_1 k1\_scmpds\_2)) \quad (8)$$

Assume the following.

$$\forall X0.(v1\_finset\_1 X0)\Rightarrow(m1\_subset\_1 (k5\_card\_1 X0) k4\_ordinal1) \quad (9)$$

Assume the following.

$$\forall X0.(v1\_int\_1 X0)\Rightarrow(m1\_subset\_1 (k3\_scmpds\_2 X0) (u1\_compos\_1 k1\_scmpds\_2)) \quad (10)$$

Assume the following.

$$\forall X0.(((v1\_ami\_2 X0)\wedge(m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmpds\_2)))\Rightarrow ((\forall X1.(v1\_int\_1 X1)\Rightarrow(\forall X2.((\neg v1\_xboole\_0 X2)\wedge((v1\_relat\_1 X2)\wedge((v4\_relat\_1 X2 k5\_numbers)\wedge((v5\_relat\_1 X2 (u1\_compos\_1 k1\_scmpds\_2))\wedge((v1\_funct\_1 X2)\wedge((v1\_finset\_1 X2)\wedge(v1\_afinsq\_1 X2))))))))))\Rightarrow(k2\_scmpds\_8 X0 X1 X2 = k3\_scmpds\_4 (k2\_scmpds\_4 (k8\_scmpds\_2 X0 X1 (k2\_nat\_1 (k5\_card\_1 X2) np\_2)) X2) (k3\_scmpds\_2 (k4\_xcmplx\_0 (k2\_nat\_1 (k5\_card\_1 X2) np\_1)))))) \quad (11)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 k4\_ordinal1)\Rightarrow(v7\_ordinal1 X0) \quad (12)$$

Assume the following.

$$\forall X0.(v7\_ordinal1 X0)\Rightarrow(v1\_int\_1 X0) \quad (13)$$

**Theorem 1**

$$\begin{aligned} \forall X0.((v1\_ami\_2 X0) \wedge (m1\_subset\_1 X0 (u1\_struct\_0 k1\_scmpds\_2))) \Rightarrow \\ (\forall X1.(v1\_int\_1 X1) \Rightarrow (\forall X2.((\neg v1\_xboole\_0 X2) \wedge (( \\ v1\_relat\_1 X2) \wedge ((v4\_relat\_1 X2 k5\_numbers) \wedge ((v5\_relat\_1 X2 ( \\ u1\_compos\_1 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X2) \wedge ((v1\_finset\_1 X2) \wedge \\ (v1\_afinsq\_1 X2)))))) \Rightarrow (k2\_scmpds\_8 X0 X1 X2 = k2\_scmpds\_4 (k8\_scmpds\_2 \\ X0 X1 (k2\_nat\_1 (k5\_card\_1 X2) np\_2)) (k3\_scmpds\_4 X2 (k3\_scmpds\_2 \\ (k4\_xcmplx\_0 (k2\_nat\_1 (k5\_card\_1 X2) np\_1))))))) \end{aligned}$$