

# l15\_scmp\_gcd

(TMTfc2w4wVdKrz5xaifwFtFJnd93XfMeuC4)

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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  $r1\_tarski : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_scmp\_gcd : \iota$  be given. Let  $k3\_compos\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k6\_numbers : \iota$  be given. Let  $k5\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_scmp\_gcd : \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $k3\_scmp\_gcd : \iota$  be given. Let  $np\_7 : \iota$  be given. Let  $np\_2 : \iota$  be given. Let  $k6\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_scmpds\_i : \iota$  be given. Let  $np\_3 : \iota$  be given. Let  $k3\_scmpds\_2 : \iota \Rightarrow \iota$  be given. Let  $np\_4 : \iota$  be given. Let  $k2\_compos\_1 : \iota \Rightarrow \iota$  be given. Let  $np\_5 : \iota$  be given. Let  $k8\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_9 : \iota$  be given. Let  $np\_6 : \iota$  be given. Let  $k16\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k15\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_8 : \iota$  be given. Let  $k2\_nat\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k14\_scmpds\_i : \iota$  be given. Let  $np\_10 : \iota$  be given. Let  $k11\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_11 : \iota$  be given. Let  $np\_12 : \iota$  be given. Let  $k4\_xcmplx\_0 : \iota \Rightarrow \iota$  be given. Let  $np\_13 : \iota$  be given. Let  $np\_14 : \iota$  be given. Let  $k4\_scmpds\_2 : \iota \Rightarrow \iota$  be given. Let  $k5\_card\_1 : \iota \Rightarrow \iota$  be given. Let  $np\_15 : \iota$  be given. Let  $v1\_xboole\_0 : \iota \Rightarrow o$  be given. Let  $k1\_xboole\_0 : \iota$  be given. Let  $v1\_finset\_1 : \iota \Rightarrow o$  be given. Let  $v1\_afinsq\_1 : \iota \Rightarrow o$  be given. Let  $v7\_ordinal1 : \iota \Rightarrow o$  be given. Let  $k2\_afinsq\_1 : \iota \Rightarrow \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k9\_xtuple\_0 : \iota \Rightarrow \iota$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k4\_ordinal1 : \iota$  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  $np\_0 : \iota$  be given. Let  $l1\_compos\_1 : \iota \Rightarrow o$  be given. Let  $v5\_ordinal1 : \iota \Rightarrow o$  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  $v1\_extpro\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$k5\_card\_1 \ k4\_scmp\_gcd = np\_15 \tag{1}$$

Assume the following.

$$\forall X0.(v1\_xboole\_0 \ X0) \Rightarrow (X0 = k1\_xboole\_0) \tag{2}$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow (\forall X1.(v7\_ordinal1 X1) \Rightarrow ((X1 \in k2\_afinsq\_1 X0) \Leftrightarrow (\neg r1\_xxreal\_0 (k5\_card\_1 X0) X1))) \quad (3)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge (v1\_funct\_1 X0)) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge (v1\_funct\_1 X1)) \Rightarrow ((r1\_tarski X0 X1) \Leftrightarrow ((r1\_tarski (k9\_xtuple\_0 X0) (k9\_xtuple\_0 X1)) \wedge (\forall X2.(X2 \in k9\_xtuple\_0 X0) \Rightarrow (k1\_funct\_1 X0 X2 = k1\_funct\_1 X1 X2)))))) \quad (4)$$

Assume the following.

$$m1\_subset\_1 k1\_xboole\_0 k4\_ordinal1 \quad (5)$$

Assume the following.

$$\begin{aligned} & (k1\_funct\_1 k4\_scmp\_gcd k6\_numbers = k5\_scmpds\_2 k2\_scmp\_gcd \\ & k6\_numbers) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_1 = k5\_scmpds\_2 k3\_scmp\_gcd \\ & np\_7) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_2 = k6\_scmpds\_2 k3\_scmp\_gcd \\ & k15\_scmpds\_i) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_3 = k3\_scmpds\_2 np\_2) \wedge \\ & ((k1\_funct\_1 k4\_scmp\_gcd np\_4 = k2\_compos\_1 k1\_scmpds\_2) \wedge (( \\ & k1\_funct\_1 k4\_scmp\_gcd np\_5 = k8\_scmpds\_2 k3\_scmp\_gcd np\_3 np\_9) \wedge \\ & ((k1\_funct\_1 k4\_scmp\_gcd np\_6 = k16\_scmpds\_2 k3\_scmp\_gcd k3\_scmp\_gcd \\ & np\_6 np\_3) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_7 = k15\_scmpds\_2 k3\_scmp\_gcd \\ & k3\_scmp\_gcd np\_2 np\_3) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_8 = k16\_scmpds\_2 \\ & k3\_scmp\_gcd k3\_scmp\_gcd np\_7 np\_3) \wedge ((k1\_funct\_1 k4\_scmp\_gcd \\ & np\_9 = k16\_scmpds\_2 k3\_scmp\_gcd k2\_scmp\_gcd (k2\_nat\_1 np\_4 k14\_scmpds\_i) \\ & np\_1) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_10 = k11\_scmpds\_2 k2\_scmp\_gcd \\ & np\_1 np\_4) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_11 = k6\_scmpds\_2 k3\_scmp\_gcd \\ & k15\_scmpds\_i) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_12 = k3\_scmpds\_2 \\ & (k4\_xcmplx\_0 np\_7)) \wedge ((k1\_funct\_1 k4\_scmp\_gcd np\_13 = k16\_scmpds\_2 \\ & k3\_scmp\_gcd k3\_scmp\_gcd np\_2 np\_6) \wedge (k1\_funct\_1 k4\_scmp\_gcd \\ & np\_14 = k4\_scmpds\_2 k3\_scmp\_gcd)))))))))) \quad (6) \end{aligned}$$

Assume the following.

$$((v2\_xxreal\_0 np\_9) \wedge (m2\_subset\_1 np\_9 k1\_numbers k5\_numbers)) \wedge ((m1\_subset\_1 np\_9 k5\_numbers) \wedge (m1\_subset\_1 np\_9 k1\_numbers)) \quad (7)$$

Assume the following.

$$((v2\_xxreal\_0 np\_8) \wedge (m2\_subset\_1 np\_8 k1\_numbers k5\_numbers)) \wedge ((m1\_subset\_1 np\_8 k5\_numbers) \wedge (m1\_subset\_1 np\_8 k1\_numbers)) \quad (8)$$

Assume the following.

$$((v2\_xxreal\_0 np\_7) \wedge (m2\_subset\_1 np\_7 k1\_numbers k5\_numbers)) \wedge ((m1\_subset\_1 np\_7 k5\_numbers) \wedge (m1\_subset\_1 np\_7 k1\_numbers)) \quad (9)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_6) \wedge (m2\_subset\_1 \ np\_6 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_6 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_6 \ k1\_numbers)) \end{aligned} \quad (10)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_5) \wedge (m2\_subset\_1 \ np\_5 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_5 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_5 \ k1\_numbers)) \end{aligned} \quad (11)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_4) \wedge (m2\_subset\_1 \ np\_4 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_4 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_4 \ k1\_numbers)) \end{aligned} \quad (12)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_3) \wedge (m2\_subset\_1 \ np\_3 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_3 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_3 \ k1\_numbers)) \end{aligned} \quad (13)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_2) \wedge (m2\_subset\_1 \ np\_2 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_2 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_2 \ k1\_numbers)) \end{aligned} \quad (14)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_1) \wedge (m2\_subset\_1 \ np\_1 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_1 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_1 \ k1\_numbers)) \end{aligned} \quad (15)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_14) \wedge (m2\_subset\_1 \ np\_14 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_14 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_14 \ k1\_numbers)) \end{aligned} \quad (16)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_13) \wedge (m2\_subset\_1 \ np\_13 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_13 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_13 \ k1\_numbers)) \end{aligned} \quad (17)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_12) \wedge (m2\_subset\_1 \ np\_12 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_12 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_12 \ k1\_numbers)) \end{aligned} \quad (18)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_11) \wedge (m2\_subset\_1 \ np\_11 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_11 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_11 \ k1\_numbers)) \end{aligned} \quad (19)$$

Assume the following.

$$\begin{aligned} & ((v2\_xxreal\_0 \ np\_10) \wedge (m2\_subset\_1 \ np\_10 \ k1\_numbers \ k5\_numbers)) \wedge \\ & ((m1\_subset\_1 \ np\_10 \ k5\_numbers) \wedge (m1\_subset\_1 \ np\_10 \ k1\_numbers)) \end{aligned} \quad (20)$$

Assume the following.

$$v1\_xboole\_0 \ np\_0 \quad (21)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_9 \quad (22)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_8 \quad (23)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_7 \quad (24)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_6 \quad (25)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_5 \quad (26)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_4 \quad (27)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_3 \quad (28)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_2 \quad (29)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_14 \quad (30)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_13 \quad (31)$$

Assume the following.

$$\neg r1\_xxreal\_0 \ np\_15 \ np\_12 \quad (32)$$

Assume the following.

$$\neg r1\_xxreal\_0 \text{ np\_15 np\_11} \quad (33)$$

Assume the following.

$$\neg r1\_xxreal\_0 \text{ np\_15 np\_10} \quad (34)$$

Assume the following.

$$\neg r1\_xxreal\_0 \text{ np\_15 np\_1} \quad (35)$$

Assume the following.

$$\neg r1\_xxreal\_0 \text{ np\_15 np\_0} \quad (36)$$

Assume the following.

$$k6\_numbers = k1\_xboole\_0 \quad (37)$$

Assume the following.

$$k5\_numbers = k4\_ordinal1 \quad (38)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. ((l1\_compos\_1 X0) \wedge ((v1\_relat\_1 \\ & X1) \wedge ((v4\_relat\_1 X1 k5\_numbers) \wedge ((v5\_relat\_1 X1 (u1\_compos\_1 \\ & X0)) \wedge ((v1\_funct\_1 X1) \wedge (v1\_partfun1 X1 k5\_numbers)))))) \wedge (v7\_ordinal1 \\ & X2)) \Rightarrow (k3\_compos\_1 X0 X1 X2 = k1\_funct\_1 X1 X2) \end{aligned} \quad (39)$$

Assume the following.

$$\forall X0. ((v1\_relat\_1 X0) \wedge ((v5\_ordinal1 X0) \wedge ((v1\_funct\_1 X0) \wedge (v1\_finset\_1 X0)))) \Rightarrow (k2\_afinsq\_1 X0 = k9\_xtuple\_0 X0) \quad (40)$$

Assume the following.

$$\forall X0. \forall X1. (l1\_extpro\_1 X1 X0) \Rightarrow ((l1\_memstr\_0 X1 X0) \wedge (l1\_compos\_1 X1)) \quad (41)$$

Assume the following.

$$\begin{aligned} & (\neg v1\_xboole\_0 k4\_scmp\_gcd) \wedge ((v1\_relat\_1 k4\_scmp\_gcd) \wedge ((v4\_relat\_1 \\ & k4\_scmp\_gcd k5\_numbers) \wedge ((v5\_relat\_1 k4\_scmp\_gcd (u1\_compos\_1 \\ & k1\_scmpds\_2)) \wedge ((v1\_funct\_1 k4\_scmp\_gcd) \wedge ((v1\_finset\_1 k4\_scmp\_gcd) \wedge \\ & (v1\_afinsq\_1 k4\_scmp\_gcd)))))) \end{aligned} \quad (42)$$

Assume the following.

$$(v1\_extpro\_1 k1\_scmpds\_2 \text{ np\_2}) \wedge (l1\_extpro\_1 k1\_scmpds\_2 \text{ np\_2}) \quad (43)$$

Assume the following.

$$\forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 \ k5\_numbers) \wedge ((v1\_funct\_1 X0) \wedge ((v1\_finset\_1 X0) \wedge (v1\_afinsq\_1 X0)))))) \Rightarrow ((v1\_relat\_1 X0) \wedge ((v5\_ordinal1 X0) \wedge (v1\_funct\_1 X0))) \quad (44)$$

Assume the following.

$$\forall X0.(m1\_subset\_1 X0 \ k4\_ordinal1) \Rightarrow (v7\_ordinal1 X0) \quad (45)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 \ k5\_numbers) \wedge ((v5\_relat\_1 X0 \ (u1\_compos\_1 \ k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 X0 \ k5\_numbers)))))) \Rightarrow ((r1\_tarski \ k4\_scmp\_gcd X0) \Rightarrow ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ k6\_numbers = k5\_scmpds\_2 \ k2\_scmp\_gcd \ k6\_numbers) \wedge \\ & ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_1 = k5\_scmpds\_2 \ k3\_scmp\_gcd \ np\_7) \wedge \\ & ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_2 = k6\_scmpds\_2 \ k3\_scmp\_gcd \ k15\_scmpds\_i) \wedge \\ & ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_3 = k3\_scmpds\_2 \ np\_2) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_4 = k2\_compos\_1 \ k1\_scmpds\_2) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_5 = k8\_scmpds\_2 \ k3\_scmp\_gcd \ np\_3 \ np\_9) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_6 = k16\_scmpds\_2 \ k3\_scmp\_gcd \ k3\_scmp\_gcd \ np\_6 \ np\_3) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_7 = k15\_scmpds\_2 \ k3\_scmp\_gcd \ k3\_scmp\_gcd \ np\_2 \ np\_3) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_8 = k16\_scmpds\_2 \ k3\_scmp\_gcd \ k3\_scmp\_gcd \ np\_7 \ np\_3) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_9 = k16\_scmpds\_2 \ k3\_scmp\_gcd \ k2\_scmp\_gcd \ (k2\_nat\_1 \ np\_4 \ k14\_scmpds\_i) \ np\_1) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_10 = k11\_scmpds\_2 \ k2\_scmp\_gcd \ np\_1 \ np\_4) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_11 = k6\_scmpds\_2 \ k3\_scmp\_gcd \ k15\_scmpds\_i) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_12 = k3\_scmpds\_2 \ (k4\_xcmplx\_0 \ np\_7) \wedge ((k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_13 = k16\_scmpds\_2 \ k3\_scmp\_gcd \ k3\_scmp\_gcd \ np\_2 \ np\_6) \wedge (k3\_compos\_1 \ k1\_scmpds\_2 \ X0 \ np\_14 = k4\_scmpds\_2 \ k3\_scmp\_gcd)))))))))))))) \end{aligned}$$