

t19\_scpinvar  
(TMKC2vMsPGX2MXqC58iXGzWeJFPtZXm2asf)

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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  $v5\_memstr\_0 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_numbers : \iota$  be given. Let  $v1\_int\_1 : \iota \Rightarrow o$  be given. Let  $k1\_funct\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k1\_scmp\_gcd : \iota \Rightarrow \iota$  be given. Let  $np\_1 : \iota$  be given. Let  $r1\_xxreal\_0 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $k6\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_scpinvar : \iota$  be given. Let  $k3\_int\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  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  $k1\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_scmpds\_4 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k5\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k2\_scmp\_gcd : \iota$  be given. Let  $k16\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $np\_3 : \iota$  be given. Let  $k13\_scmpds\_2 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k4\_scpinvar : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k3\_scmpds\_6 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $k9\_compos\_1 : \iota \Rightarrow \iota \Rightarrow \iota$  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 \\
& (\neg(\neg r1\_xxreal\_0 (k1\_funct\_1 X1 (k1\_scmp\_gcd np\_1)) k6\_numbers) \wedge \\
& ((\neg r1\_xxreal\_0 (k1\_funct\_1 X1 (k1\_scmp\_gcd np\_2)) k6\_numbers) \wedge \\
& (\neg(k1\_funct\_1 (k6\_scmpds\_4 (k1\_scmpds\_4 (k3\_scmpds\_4 (k4\_scmpds\_4 \\
& (k5\_scmpds\_2 k2\_scmp\_gcd k6\_numbers) (k16\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& np\_3 np\_2)) (k4\_scpinvar k2\_scmp\_gcd np\_3 (k3\_scmpds\_4 (k3\_scmpds\_4 \\
& (k3\_scmpds\_6 k2\_scmp\_gcd np\_3 (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_1 np\_2)) (k9\_compos\_1 k1\_scmpds\_2 \\
& (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_2 np\_1)) (k16\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_3 np\_2)))) X1 X0) (k1\_scmp\_gcd np\_1) = k3\_int\_2 \\
& (k1\_funct\_1 X1 (k1\_scmp\_gcd np\_1)) (k1\_funct\_1 X1 (k1\_scmp\_gcd \\
& np\_2)))) \wedge ((k1\_funct\_1 (k6\_scmpds\_4 (k1\_scmpds\_4 (k3\_scmpds\_4 \\
& (k4\_scmpds\_4 (k5\_scmpds\_2 k2\_scmp\_gcd k6\_numbers) (k16\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_3 np\_2)) (k4\_scpinvar k2\_scmp\_gcd np\_3 (k3\_scmpds\_4 \\
& (k3\_scmpds\_4 (k3\_scmpds\_6 k2\_scmp\_gcd np\_3 (k9\_compos\_1 k1\_scmpds\_2 \\
& (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_1 np\_2)) (k9\_compos\_1 \\
& k1\_scmpds\_2 (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_2 np\_1)) \\
& (k16\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_2)))) X1 X0) (k1\_scmp\_gcd np\_2) = \\
& k3\_int\_2 (k1\_funct\_1 X1 (k1\_scmp\_gcd np\_1)) (k1\_funct\_1 X1 (k1\_scmp\_gcd \\
& np\_2)))) \wedge ((r1\_scmpds\_6 (k1\_scmpds\_4 (k3\_scmpds\_4 (k4\_scmpds\_4 \\
& (k5\_scmpds\_2 k2\_scmp\_gcd k6\_numbers) (k16\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& np\_3 np\_2)) (k4\_scpinvar k2\_scmp\_gcd np\_3 (k3\_scmpds\_4 (k3\_scmpds\_4 \\
& (k3\_scmpds\_6 k2\_scmp\_gcd np\_3 (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_1 np\_2)) (k9\_compos\_1 k1\_scmpds\_2 \\
& (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_2 np\_1)) (k16\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_3 np\_2)))) X1 X0) \wedge (r2\_scmpds\_6 (k1\_scmpds\_4 \\
& (k3\_scmpds\_4 (k4\_scmpds\_4 (k5\_scmpds\_2 k2\_scmp\_gcd k6\_numbers) \\
& (k16\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 \\
& k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_2)) (k4\_scpinvar k2\_scmp\_gcd \\
& np\_3 (k3\_scmpds\_4 (k3\_scmpds\_4 (k3\_scmpds\_6 k2\_scmp\_gcd np\_3 \\
& (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& np\_1 np\_2)) (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 k2\_scmp\_gcd \\
& k2\_scmp\_gcd np\_2 np\_1)) (k16\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_2)))) \\
& X1 X0))))))
\end{aligned}$$

Assume the following.

$$\begin{aligned}
& k5\_scpinvar = k1\_scmpds\_4 (k3\_scmpds\_4 (k4\_scmpds\_4 (k5\_scmpds\_2 \\
& \quad k2\_scmp\_gcd k6\_numbers) (k16\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& \quad np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd np\_3 np\_2)) \\
& (k4\_scpinvar k2\_scmp\_gcd np\_3 (k3\_scmpds\_4 (k3\_scmpds\_4 (k3\_scmpds\_6 \\
& \quad k2\_scmp\_gcd np\_3 (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 k2\_scmp\_gcd \\
& \quad k2\_scmp\_gcd np\_1 np\_2)) (k9\_compos\_1 k1\_scmpds\_2 (k13\_scmpds\_2 \\
& \quad k2\_scmp\_gcd k2\_scmp\_gcd np\_2 np\_1))) (k16\_scmpds\_2 k2\_scmp\_gcd \\
& \quad k2\_scmp\_gcd np\_3 np\_1)) (k13\_scmpds\_2 k2\_scmp\_gcd k2\_scmp\_gcd \\
& \quad np\_3 np\_2)))
\end{aligned} \tag{2}$$

**Theorem 1**

$$\begin{aligned}
& \forall X0.((v1\_relat\_1 X0) \wedge ((v4\_relat\_1 X0 k5\_numbers) \wedge ((v5\_relat\_1 \\
& \quad X0 (u1\_compos\_1 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X0) \wedge (v1\_partfun1 \\
& \quad X0 k5\_numbers)))))) \Rightarrow (\forall X1.((v1\_relat\_1 X1) \wedge ((v4\_relat\_1 \\
& \quad X1 (u1\_struct\_0 k1\_scmpds\_2)) \wedge ((v1\_funct\_1 X1) \wedge ((v5\_funct\_1 \\
& \quad X1 (k2\_memstr\_0 np\_2 k1\_scmpds\_2)) \wedge ((v1\_partfun1 X1 (u1\_struct\_0 \\
& \quad k1\_scmpds\_2)) \wedge (v5\_memstr\_0 X1 np\_2 k1\_scmpds\_2 k6\_numbers)))))) \Rightarrow \\
& \quad (\forall X2.(v1\_int\_1 X2) \Rightarrow (\forall X3.(v1\_int\_1 X3) \Rightarrow (((k1\_funct\_1 \\
& \quad X1 (k1\_scmp\_gcd np\_1) = X2) \wedge (k1\_funct\_1 X1 (k1\_scmp\_gcd np\_2) = \\
& \quad X3)) \Rightarrow ((r1\_xxreal\_0 X2 k6\_numbers) \vee ((r1\_xxreal\_0 X3 k6\_numbers) \vee \\
& \quad ((k1\_funct\_1 (k6\_scmpds\_4 k5\_scpinvar X1 X0) (k1\_scmp\_gcd np\_1) = \\
& \quad k3\_int\_2 X2 X3) \wedge ((k1\_funct\_1 (k6\_scmpds\_4 k5\_scpinvar X1 X0) ( \\
& \quad k1\_scmp\_gcd np\_2) = k3\_int\_2 X2 X3) \wedge ((r1\_scmpds\_6 k5\_scpinvar \\
& \quad X1 X0) \wedge (r2\_scmpds\_6 k5\_scpinvar X1 X0))))))))))
\end{aligned}$$