

t29\_gcd\_1 (TMS-  
FxBakFJ8quMQkzA6cEpNwFu7NfwkkSXT)

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Let  $v2\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v6\_struct\_0 : \iota \Rightarrow o$  be given. Let  $v13\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $v3\_group\_1 : \iota \Rightarrow o$  be given. Let  $v5\_group\_1 : \iota \Rightarrow o$  be given. Let  $v4\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v5\_vectsp\_1 : \iota \Rightarrow o$  be given. Let  $v2\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v3\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v4\_rlvect\_1 : \iota \Rightarrow o$  be given. Let  $v1\_vectsp\_2 : \iota \Rightarrow o$  be given. Let  $v3\_gcd\_1 : \iota \Rightarrow o$  be given. Let  $l6\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $m2\_gcd\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $m1\_subset\_1 : \iota \Rightarrow \iota \Rightarrow o$  be given. Let  $u1\_struct\_0 : \iota \Rightarrow \iota$  be given. Let  $k5\_gcd\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow \iota$  be given. Let  $l2\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l5\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_algstr\_0 : \iota \Rightarrow o$  be given. Let  $l4\_struct\_0 : \iota \Rightarrow o$  be given. Let  $r2\_gcd\_1 : \iota \Rightarrow \iota \Rightarrow \iota \Rightarrow o$  be given. Assume the following.

$$\forall X0.(l6\_algstr\_0 X0) \Rightarrow ((l2\_algstr\_0 X0) \wedge (l5\_algstr\_0 X0)) \quad (1)$$

Assume the following.

$$\forall X0.(l5\_algstr\_0 X0) \Rightarrow ((l4\_algstr\_0 X0) \wedge (l4\_struct\_0 X0)) \quad (2)$$

Assume the following.

$$\begin{aligned} & \forall X0. \forall X1. \forall X2. \forall X3. (((\neg v2\_struct\_0 \\ & X0) \wedge ((v3\_group\_1 X0) \wedge ((v4\_vectsp\_1 X0) \wedge ((v3\_gcd\_1 X0) \wedge (l4\_algstr\_0 \\ & X0)))))) \wedge ((m2\_gcd\_1 X1 X0) \wedge ((m1\_subset\_1 X2 (u1\_struct\_0 X0)) \wedge \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)))))) \Rightarrow (m1\_subset\_1 (k5\_gcd\_1 \\ & X0 X1 X2 X3) (u1\_struct\_0 X0)) \end{aligned} \quad (3)$$

Assume the following.

$$\begin{aligned} & \forall X0. ((\neg v2\_struct\_0 X0) \wedge ((v3\_group\_1 X0) \wedge ((v4\_vectsp\_1 \\ & X0) \wedge ((v3\_gcd\_1 X0) \wedge (l4\_algstr\_0 X0)))))) \Rightarrow (\forall X1.(m2\_gcd\_1 \\ & X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 X0)) \Rightarrow (\forall X3. \\ & (m1\_subset\_1 X3 (u1\_struct\_0 X0)) \Rightarrow (\forall X4.(m1\_subset\_1 X4 \\ & (u1\_struct\_0 X0)) \Rightarrow ((X4 = k5\_gcd\_1 X0 X1 X2 X3) \Leftrightarrow ((X4 \in X1) \wedge ((r2\_gcd\_1 \\ & X0 X4 X2) \wedge ((r2\_gcd\_1 X0 X4 X3) \wedge (\forall X5.(m1\_subset\_1 X5 (u1\_struct\_0 \\ & X0)) \Rightarrow ((r2\_gcd\_1 X0 X5 X2) \wedge (r2\_gcd\_1 X0 X5 X3)) \Rightarrow (r2\_gcd\_1 X0 X5 \\ & X4)))))))))) \end{aligned} \quad (4)$$

**Theorem 1**

$$\begin{aligned} & \forall X0.((\neg v2\_struct\_0 X0) \wedge ((\neg v6\_struct\_0 X0) \wedge ((v13\_algstr\_0 \\ & X0) \wedge ((v3\_group\_1 X0) \wedge ((v5\_group\_1 X0) \wedge ((v4\_vectsp\_1 X0) \wedge (( \\ & v5\_vectsp\_1 X0) \wedge ((v2\_rlvect\_1 X0) \wedge ((v3\_rlvect\_1 X0) \wedge ((v4\_rlvect\_1 \\ & X0) \wedge ((v1\_vectsp\_2 X0) \wedge ((v3\_gcd\_1 X0) \wedge (l6\_algstr\_0 X0)))))))))) \Rightarrow \\ & (\forall X1.(m2\_gcd\_1 X1 X0) \Rightarrow (\forall X2.(m1\_subset\_1 X2 (u1\_struct\_0 \\ & X0) \Rightarrow (\forall X3.(m1\_subset\_1 X3 (u1\_struct\_0 X0) \Rightarrow (k5\_gcd\_1 \\ & X0 X1 X2 X3 = k5\_gcd\_1 X0 X1 X3 X2)))))) \end{aligned}$$