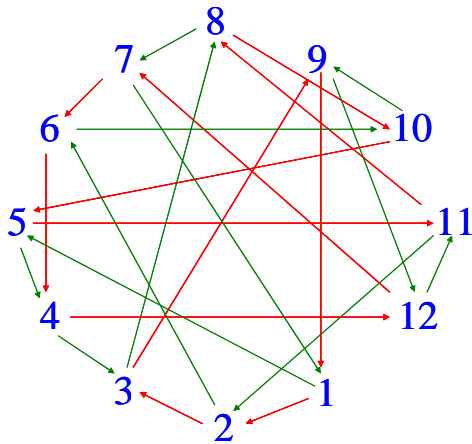## Z3 SEMIDIRECT PRODUCT Z4

$$\mathbb{Z}_3 \rtimes \mathbb{Z}_4$$

Generators:

(1,2,3,9)(4,12,7,6)(5,11,8,10), (1,5,4,3,8,7)(2,6,10,9,12,11)

Generator Diagram:

Order:

12

Elements:

{ (), (1,2,3,9)(4,12,7,6)(5,11,8,10), (1,3)(2,9)(4,7)(5,8)(6,12)(10,11),
(1,4,8)(2,10,12)(3,7,5)(6,9,11), (1,5,4,3,8,7)(2,6,10,9,12,11),
(1,6,3,12)(2,8,9,5)(4,11,7,10), (1,7,8,3,4,5)(2,11,12,9,10,6),
(1,8,4)(2,12,10)(3,5,7)(6,11,9), (1,9,3,2)(4,6,7,12)(5,10,8,11),
(1,10,3,11)(2,7,9,4)(5,6,8,12),(1,11,3,10)(2,4,9,7)(5,12,8,6),
(1,12,3,6)(2,5,9,8)(4,10,7,11) }

Is Abelian?

No

Subgroups (conjugates for a given order shown in the same, non-blue color):

{ (), (1,2,3,9)(4,12,7,6)(5,11,8,10), (1,3)(2,9)(4,7)(5,8)(6,12)(10,11),
(1,4,8)(2,10,12)(3,7,5)(6,9,11), (1,5,4,3,8,7)(2,6,10,9,12,11),
(1,6,3,12)(2,8,9,5)(4,11,7,10), (1,7,8,3,4,5)(2,11,12,9,10,6),
(1,8,4)(2,12,10)(3,5,7)(6,11,9), (1,9,3,2)(4,6,7,12)(5,10,8,11),
(1,10,3,11)(2,7,9,4)(5,6,8,12),(1,11,3,10)(2,4,9,7)(5,12,8,6),
(1,12,3,6)(2,5,9,8)(4,10,7,11) }
normal

$$\left\{ \begin{array}{c} (\,) \\ (1,3)(2,9)(4,7)(5,8)(6,12)(10,11) \\ (1,4,8)(2,10,12)(3,7,5)(6,9,11) \\ (1,5,4,3,8,7)(2,6,10,9,12,11) \\ (1,7,8,3,4,5)(2,11,12,9,10,6) \\ (1,8,4)(2,12,10)(3,5,7)(6,11,9) \end{array} \right\}$$
normal , even

$$\left\{ \begin{array}{c} (\,) \\ (1,3)(2,9)(4,7)(5,8)(6,12)(10,11) \\ (1,10,3,11)(2,7,9,4)(5,6,8,12) \\ (1,22,3,10)(2,4,9,7)(5,12,8,6) \end{array} \right\} \quad \left\{ \begin{array}{c} (\,) \\ (1,3)(2,9)(4,7)(5,8)(6,12)(10,11) \\ (1,6,3,12)(2,8,9,5)(4,11,7,10) \\ (1,12,3,6)(2,5,9,8)(4,10,7,11) \end{array} \right\}$$

$$\left\{ \begin{array}{c} (\,) \\ (1,3)(2,9)(4,7)(5,8)(6,12)(10,11) \\ (1,2,3,9)(4,12,7,6)(5,11,8,10) \\ (1,9,3,2)(4,6,7,12)(5,10,8,11) \end{array} \right\}$$

$$\left\{ \begin{array}{c} (\,) \\ (1,4,8)(2,10,12)(3,7,5)(6,9,11) \\ (1,8,4)(2,12,10)(3,5,7)(6,11,9) \end{array} \right\}$$
normal, commutator (derived)

$$\left\{ \begin{array}{c} (\,) \\ (1,3)(2,9)(4,7)(5,8)(6,12)(10,11) \end{array} \right\}$$
normal, center

{( )}
normal