

## Lesson 25

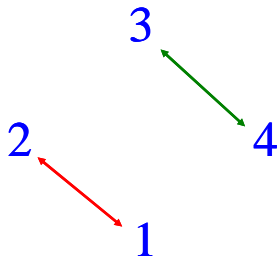
### KLEIN 4-GROUP

$$\mathbb{Z}_2 \times \mathbb{Z}_2$$

Generators:

(1,2), (3,4)

Generator Diagram:



Order:

4

Elements:

{  $()$ ,  $(3, 4)$ ,  $(1, 2)$ ,  $(1, 2)(3, 4)$  }

Is Abelian?

Yes

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

$$\left\{ \begin{array}{c} () \\ (1,2) \\ (3,4) \\ (1,2)(3,4) \end{array} \right\}$$

center

$$\left\{ \begin{array}{c} () \\ (1,2) \end{array} \right\}$$

$$\left\{ \begin{array}{c} () \\ (3,4) \end{array} \right\}$$

$$\left\{ \begin{array}{c} () \\ (1,2)(3,4) \end{array} \right\}$$

normal, even

$$\{()\}$$

commutator (derived)