Answer on Question #66440 – Math – Abstract Algebra

Question

Give an example with justification of a commutative subgroup of a non commutative group.

Solution

Let's consider the quaternion group:

$$Q_8 = \{1, -1, i, -i, j, -j, k, -k\}$$

It is non commutative because not all elements commutate (e.g., $ij = k$, but $ji = -k$).

One of its subgroup is

$$\{1, -1, i, -i\}.$$

It is commutative because there is only one imaginary unit.