Question: 34

Find all the subgroups of $\mathbb{Z}_3 \times \mathbb{Z}_3$. Use this information to show that $\mathbb{Z}_3 \times \mathbb{Z}_3 \ncong \mathbb{Z}_9$.

Solution:

Question: 35

Find all the subgroups of the symmetry group of an equilateral triangle

Solution:

Question: 41

Prove that

$$G = \{a + b\sqrt{2} : a, b \in \mathbb{Q} \wedge a, b \neq 0\}$$

is a subgroup of $\mathbb{R}^*$ under the group operation of multiplication.

Solution:

Question: 45

Prove that the intersection of two subgroups of a group G is also a subgroup of G.

Solution:

Question: 46

Prove or disprove: If H and K are subgroups of a group G, then $H \cup K$ is a subgroup of G.

Solution:

Question: 47

Prove or disprove: If H and K are subgroups of a group G, then $HK = \{hk : h \in H \wedge k \in K\}$ is a subgroup of G. What is G is abelian?

Solution:

Question: 48

Prove

Solution:

Question: 53

Prove

Solution:

Question: 54

Prove

Solution: