

MATH 412 HW 11

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1. Find all subgroups of $\mathbb{Z}_2 \times \mathbb{Z}_2 \times \mathbb{Z}_2$. Hint: there are 16 counting the whole group and the one element group.

Solution:

2. Let G be a group and let $D = \{(a, a) : a \in G\}$. Show that D is a subgroup of $G \times G$. Also show that D is a normal subgroup of $G \times G$ if and only if G is abelian.

Solution:

3. Let G be an abelian group and let p be a prime. Show that

$$\{a^p : a \in G\}$$

is a subgroup.

Solution: