

Homework #1

Assigned: 11.10.2019

Deadline: 25.10.2019

Factor group (7 points)

Multiplication table of an abstract 6-element group is

E	A	B	C	D	F
A	E	D	F	B	C
B	F	E	D	C	A
C	D	F	E	A	B
D	C	A	B	F	E
F	B	C	A	E	D

1. Find all non-trivial normal subgroups. Choose one and verify explicitly that corresponding left and right cosets are identical.
2. Construct multiplication tables of the factor groups with respect to the above normal subgroups.

Direct product group (10 points)

1. Show that the group D_6 generated by six-fold rotations about the z -axis and two-fold rotations about the x -axis is the direct product group $D_3 \otimes C_2$, where the principal axis of both D_3 and C_2 is the z -axis.
2. Divide the elements of D_6 , D_3 and C_2 into classes.