

EXERCISE SHEET 13

More on Sylow's theorem

Exercise 1. Classify all the groups of order 45.

Exercise 2. Prove that every group of order 80 has a non-trivial normal subgroup.

Exercise 3. Prove that a group of order 96 has a non-trivial normal subgroup.

Exercise 4. Prove that a group of order 105 has a normal cyclic subgroup of order 35.
(Hint: find a normal 7-Sylow or a normal 5-Sylow, and consider the quotient.)