Sylow's Theorem

Exercises

Let G be a finite group and let p be a prime.

Exercise 1. Prove that if $P \in Syl_p(G)$ and H is a subgroup of G containing P then $P \in Syl_p(H)$. 4.5.1

Exercise 2. Give an example to show that, in general, a Sylow p-subgroup of a subgroup of G need not be a Sylow p-subgroup of G. 4.5.1

Exercise 3. Use Sylow's Theorem to prove Cauchy's Theorem. 4.5.3

Exercise 4. Exhibit all Sylow 2-subgroups and Sylow 3-subgroups of D_{12}. 4.5.4

Exercise 5. Exhibit all Sylow 2-subgroups and Sylow 3-subgroups of $S_3 \times S_3$. 4.5.4