

Due Monday, March 30

1. List all the Sylow 2-subgroups and 3-subgroups of S_3 .
2. Problem 12 Page 327. Apply the 2nd Sylow. Note that a group is simple iff the only normal subgroup it has is itself and $\{e\}$.
3. Problem 13 Page 327. Apply the 3rd Sylow.
4. Problem 17 Page 327.
5. Problem 19 Page 327.
6. Problem 21 Page 327. Show that there is an element $x \in Z(G)$ of order p , and consider the projection homomorphism $\gamma : G \rightarrow G/(x)$. Then do induction.
7. Problem 8 Page 333. For part (a), consider $\tau\sigma\tau^{-1}$ applied to $\tau(a_i)$.
8. (Bonus) Problem 22 Page 327.