

MATH 101A: HOMEWORK

3. HOMEWORK 3

Remember, you don't have to do the homework yourself. It is more fun and educational to work in groups. However, each student should write his own answers using his own words.

The following problems are due Thursday (9/20/7). I will post the answers after I grade it.

3.1. Show that every subgroup of G containing $N_G(P)$ is self-normalizing. [This means $H = N_G(H)$ for every H which contains $N_G(P)$.]

3.2. If $K \trianglelefteq G$ and P is a Sylow subgroup of K then $KN_G(P) = G$. [This follows from the fact that all conjugates of P lie in K .]

3.3. **Skip this.** If each Sylow subgroup of G is normal then G is the product of its Sylow subgroups.

3.4. Show that $T(n, \mathbb{Z})$ is nilpotent.