

Math 71
Homework 6

- page 122: 8, 10, 14
- pp 165-166: 2(b,e), 3(b,e)
- The following additional problems:
 1. Let G be a group of order 48. Show that G has a normal subgroup of order 8 or 16. Some hints are provided.
 - (a) If there is more than one Sylow 2-subgroup, let H and K be any two (distinct) Sylow 2-subgroups. Show that $|H \cap K| = 8$.
 - (b) Show that for the H and K above, that $H, K \subseteq N_G(H \cap K)$.
 - (c) Show that $G = N_G(H \cap K)$.
 2. Let G be a group of order $231 = 3 \cdot 7 \cdot 11$, and suppose that there is only one Sylow 3-subgroup. Show that G is cyclic.