

PROBLEM SET 5, 25600 SECTION 31

Due Wednesday April 29 in class.

1. (10 points) Suppose G is a group of order $255 = 3 \cdot 5 \cdot 17$.
 - a) How many Sylow 3-subgroups does G have? (List all possible answers.)
 - b) How many Sylow 5-subgroups does G have? (List all possible answers.)
 - c) How many Sylow 17-subgroups does G have? (List all possible answers.)
 - d) Prove that G is not simple. (Hint: Use problem 3 below.)
 - e) Give the factor groups of a composition series of G .
2. (10 points) Fraleigh, problem 36-10.
3. (5 points) Fraleigh, problem 36-12.
4. (5 points) Fraleigh, problem 36-20.
5. (5 points) Fraleigh, problem 37-3, the even parts.
6. (5 points) Fraleigh, problem 37-9.