MODERN ALGEBRA I GU4041

Homework 13, due May 5: Groups of small order

1. Let $p > 3$ be a prime number. Show that any group of order $3p$ is solvable.

2. Judson, section 14.4, exercises 11, 12.

3. Show that no group of order 64 or 96 is simple. Construct two distinct non-abelian groups of each order.

4. Judson, section 15.3, exercises 20, 22, 23.

5. Show that no group of order 112 is simple. (Hint: if the group G is simple then it admits an injective homomorphism to the symmetric group S_r, where r is the number of 2-Sylow subgroups.)

Recommended reading

Gallagher notes 22, 23, 24.