

MAT 512 Fall 2016 Group Theory Exam Study Guide

Definitions:

- Group,
- subgroup,
- normal subgroup,
- equivalence modulo n ,
- equivalence modulo a subgroup,
- equivalence class,
- order of a group or subgroup,
- order of an element in a group,
- homomorphism,
- one-to-one,
- onto,
- isomorphism,
- automorphism,
- kernel of a homomorphism,
- factor group,
- internal direct product,
- external direct product,
- Abelian group,
- permutation group,
- cycle and 2-cycle (transposition),

Theorems to Outline:

- Lagrange's Theorem,
- Cauchy's Theorem,
- Fundamental Theorem of Arithmetic,
- Division Algorithm,
- First Homomorphism Theorem,
- Second Homomorphism Theorem.

Practice Problems:

- p.46 - #'s 1, 8, 9, 18
- p.54 - #'s 1, 4, 5, 6, 8, 14
- p.63 - #'s 1, 5, 9, 13, 14
- p.73 - #'s 1, 2, 3, 4
- p.82 - #'s 1, 3, 4
- p.87 - #'s 2, 3, 4
- p.91 - #'s 2, 5
- p.96 - # 1
- p.101 - #'s 1, 2
- p.117 - #'s 1, 2, 3, 6 (see theorem 3.2.4), 7, 9, 10, 13
- p.123 - #'s 1, 2, 3