Test review:

Definitions: All definitions in ch 1-7.

In particular: def of group, inverse, identity, dihedral groups (D_n and D_∞), commutative/abelian group, congruent mod n, subgroup, subgroup generated by, generating set for a group, cyclic group, cyclic subgroup, order of an element, permutation, transposition, cycle, S_n, sign of a permutation, A_n, isomorphism

Short answer: computations, true/false, short explanations.

Ex: • write $(2\,4\,6\,3)(1\,2\,3) \in S_6$ as a product of transpositions

• Give an explicit isomorphism between $S_3 \& D_3$

• Do the finite order elements of a group always form a subgroup?

Proofs:

Some shorter proofs, some of which you will have seen in class/homework/practicum.

- Let G be a group and $H_1 < G$, $H_2 < G$ subgroups of G. Prove that $H_1 \cap H_2$ is a subgroup of G.

- Prove that if $\phi : G \to H$ is a isomorphism, then $|g| = |\phi(g)|$.

- Prove that the set of 2×2 matrices with real entries and determinant 1 forms a group.