

HW 7: Review and a bit more practice.

- (1) Take time to review material from Chapters 1- 4 of Meier (excluding 3.10). We have covered most of this material (in varying degrees of depth), so read through it again and make note of any lingering questions.
- (2) From the exercises for Meier, Chapter 3 (p 96ff) do: 7, 10, 22.
- (3) (BONUS) The surface group S_g is defined by:

$$S_g = \langle a_1, a_2, \dots, a_g, b_1, b_2, \dots, b_g | [a_1, b_1][a_2, b_2] \cdots [a_g, b_g] \rangle$$

- (a) Prove that if $S_g \cong S_{g'}$ then $g = g'$. (This is a key step in many proofs of the “topological classification of surfaces.”)
- (b) Prove that S_g is abelian for $g = 1$ and nonabelian for $g \geq 2$.