

Date due: September 18, 2017

Hand in only the five starred questions. It is really important to be familiar with the examples of groups that are presented in these sections of the book, and not just to know the abstract theorems. Calculations are the way to gain this familiarity, and this is the point of the questions. For the questions you do not have to hand in, probably do them, but in some cases it may be sufficient just to look at them and think to yourself that you know how to do what is required. I recommend also that you look at the adjacent questions in the book.

Section 1.1 nos. 14, 25*, 32, 34, 36.

Section 1.2 nos. 4*, 5, 7, 11, 17*.

- A. Let α be a rotation about the origin in the plane and let ρ be the reflection in the x -axis. Show that $\rho\alpha\rho^{-1} = \alpha^{-1}$.

Section 1.3 nos. 15, 19.

Section 1.4 no. 11.

- B. * Show that the group $H(\mathbb{Z}/2\mathbb{Z})$ of 1.4 no. 11 is isomorphic to D_8 .

Section 1.5 no. 3* (proving that you have indeed found generators and relations).