MAT 150A   University of California   Fall 2011

Homework 4
due October 21, 2011 in class

Read: Artin 2.5-2.8

1. Artin 2.5.2 (pg. 73)

2. Artin 2.5.5 (pg. 73)

3. Artin 2.6.1 (pg. 74)

4. Artin 2.6.5 (pg. 74)

5. Artin 2.6.8 (pg. 74)

6. Artin 2.6.10 (pg. 74)

7. Artin 2.8.1 (pg. 75)

8. Artin 2.8.2 (pg. 75)

9. Recall that the dihedral group D_n is generated by the counterclockwise rotation x and a reflection y:

$$D_n = \langle x, y \mid x^n = y^2 = 1, xy = yx^{n-1} \rangle.$$

Use the generators and relations for D_n to show that every element of D_n, which is not a power of x has order 2. Deduce that D_n is generated by the two elements y and yx, both of which have order 2.