HW 6, due October 6, 2020

1) In the book the sign of a permutation is defined as $\operatorname{sgn}\pi = \varepsilon_{\pi(1)\ldots\pi(n)}$

Show that is equal to $(-1)^P$ where P is the number of transpositions

2) Do Exercise 14.2 of GS

3) Do Exercise 14.19 of GS

4) Consider the group with generators a and b with $a^n = 1$, $b^4 = 1$ and $(ab)^2 = 1$. $(ab^2)^2 = 1$ $(ab^3)^2 = 1$

What is the order of this group?

Note that I added two more conditions after discussion with Kaitai