Due 4/23:
All (turn in): page 187, 2, 6, 14
Present (me): 10

Page 187

Exercise 2

Prove that A_n is normal in S_n.

Exercise 6

Let H = $\{ \begin{bmatrix} a & b \\ 0 & d \end{bmatrix}$: a, b, d $\in \mathbb{R}$ and ad $\neq 0$ $\}$.
Is H a normal subgroup of GL(2, $\mathbb{R}$)?

Exercise 10

Let H = $\{(1), (12)(34)\}$ in A_4.

    a. Show that H is not normal in A_4.

    b. Referring to the multiplication table for A_4 in Table 5.1 on page 105, show that, although $\alpha_6 H = \alpha_7 H$ and $\alpha_9 H = \alpha_{11} H$, it is not true that $\alpha_6 \alpha_9 H = \alpha_7 \alpha_{11} H$.

    c. Explain why this proves that the left cosets of H do not form a group under coset multiplication.

Exercise 14

What is the order of the element $14 + \langle 8 \rangle$ in the factor group $\mathbb{Z}_{24}/\langle 8 \rangle$?