**Math 417: Homework 10**

Due Friday, November 17, 2023

1. Goodman, exercise 5.1.7.

2. Goodman, exercise 5.1.8.

3. Goodman, exercies 5.1.12.

4. Goodman, exercise 5.2.1.

5. Goodman, exercise 5.2.2.

6. The group $S_3$ acts on the set $X = \{1, 2, 3\}$. Hence, any subgroup $H \leq S_3$ also acts on $X$. Prove that the only subgroups of $S_3$ for which this action is transitive are $H = S_3$ and $H = A_3$.

7. Goodman, exercise 5.3.4.

8. Goodman, exercise 5.3.5.