Homework 2

Abstract Algebra (Fall 2017)
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Due Date: October 2, 2017.

All problems are from Chapter 2 of Artin.

1. Subsection 6: 5, 7 (a), 8, 10(a), 12
2. Subsection 7: 5
3. Subsection 8: 5, 10
4. Not to be turned in: Subsection 9 - make sure you can do problems 1-7.
5. Let S_n denote the symmetric group on $T = \{1, 2, \ldots, n\}$. Let $H \subseteq S_n$ be given by:

$$H = \{f : T \to T \mid f(1) = 1\}.$$

   (a) Show that H is a subgroup of S_n.
   (b) Describe how the left cosets of H look.
   (c) Describe how the right cosets of H look.
   (d) What is the index $[S_n : H]$?
   (e) Show that if $n \geq 3$, then H is not a normal subgroup of G.