MATH 3P12, Fall, 2018

ASSIGNMENT #3

Due: 5 pm. Friday, Nov. 9, 2018

1. Show that the mapping $a- > log_5 a$ is an isomorphism from $\mathbf{R}^+$ under multiplication to $\mathbf{R}$ under addition.

2. Let a and b be nonidentity elements of different orders in a group of G of order 55. Prove that the only subgroup of G that contains a and b is G itself.

3. Suppose H and K are subgroups of a group G. If $|H| = 10$ and $|K| = 21$, find $|H \bigcap K|$. Generalize.

4. **The following questions are from the text book (with 9th edition).**

Pages 112–116. #2, 5(c), (e), (f), 8(c),(d), 14, 19, 36 (Hint, you need to find smallest positive integer n such that $\beta^{n+5} = e$), 41.
Pages 132–136. # 3, 5, 12, 32.
Pages 150–154. # 5, 6, 16, 19

Additional Practice Exercises. Not To Be Submitted.

Pages 112–116. # 10, 12, 15, 17, 20, 23, 24, 27, 39.
Pages 132–136 # 1, 2, 6, 7, 8, 15, 22, 24, 31, 33, 35, 36, 37.
Pages 150–154. #8, 13, 18, 21, 23, 37, 39.