Math 243: Mathematical Structures, Spring 2020 **Prof. Ballantine**

Homework Assignment # 8
DUE: Thursday, April 16, at 5:00pm in Moodle.

The numbered exercises refer to the manuscript *Mathematical Structures*. Always justify all assertions.

1. Exercise 5.12

2. Let $p > 1$ be an integer with the property that for all integers a and b, if $p \mid ab$, then $p \mid a$ or $p \mid b$. Prove that p is prime. (Hint: Try a proof by contrapositive. The prime factorization of p might be useful.)

   (Note: The statement in this exercise is the converse of Euclid's Lemma.)

3. Exercise 6.1

4. Exercise 6.3

5. Exercise 6.4

6. Exercise 6.11 (b)

7. Exercise 6.12 (a)

8. Exercise 7.10