MAT 512, HOMEWORK 6

One goal for this course is for you to develop your skill in effectively communicating mathematics. With this in mind, try to write up your solutions as clearly as possible. A solution with little or no justification will receive little or no credit.

1. Do Exercise 7.1 in the textbook.

2. Do Exercise 7.3 in the textbook.

3. Do Exercise 7.7 in the textbook.

4. Do Exercse 7.10 in the textbook.

5. Consider the ring $\mathbb{Z}_{19}$. For each element $\bar{a}$ with $a = 1, 2, \ldots, 18$, find the smallest integer $n \geq 1$ such that $\bar{a}^n = \bar{1}$. Write your answers in the form of a table. (Hint: Even with a calculator, things get much easier if you work modulo 19 at each step.)