Math 112 Homework 5

Due Thursday March 14, 2019, on Canvas.

You are encouraged to discuss the homework problems with other students. However, what you hand in should reflect your own understanding of the material. You are NOT allowed to copy solutions from other students or other sources. *No late homeworks will be accepted.*

Please pay attention to the clarity and precision of your answers. Your solutions to the problems should always consist of carefully written mathematical arguments.

Material covered: Rudin pages 59–72. (Problems 1 and 3 only use Tuesday 3/5 material).

Problem 1. (3 points) Rudin Chapter 3 Problem 7. (Hint: consider the quantity $(\sqrt{a_n} - \frac{1}{n})^2$).

Problem 2. (4 points) Rudin Chapter 3 Problem 9.

Problem 3. (10 points: 3,3,2,2) Rudin Chapter 3 Problem 11.

Hint: For (a), obtain a lower bound for $\frac{a_n}{1+a_n}$ by considering separately the cases $a_n \leq 1$ and $a_n \geq 1$; be careful in your argument! For (b), observe that the divergence of $\sum a_n$ means that $s_n \to +\infty$.