

MATH322 Introduction to Mathematical Analysis II Spring 2016

Homework 6, Due IN CLASS on Wednesday, February 24, 2016

This homework requires no paper submission. We will share our explorations in Wednesday, February 24's lecture. Grades will be based on in class performance.

1. (*Equicontinuity*) Read the material on equicontinuity, and try to understand and play with this subject. Your reference could be Rudin's book, other analysis textbooks, wikipedia, google, etc. Here is an outline of what you would like to learn.

- a). Understand the definition of equicontinuous function.
- b). Figure out the connections and differences between equicontinuity, uniform continuity and uniform convergence. Can you define *uniform equicontinuity*?

Note: Remember what do we mean by "figure out the differences". Try to construct examples which lies in one category but not the other one.

- c). Learn the statement and proof of Arzela-Ascoli theorem. It is an extremely useful theorem in functional analysis and partial differential equations. Play with the proof and feel the role of equicontinuity in the theorem.
- d). Ask yourself more questions and try to answer them.