

Homework Assignment 14

Assigned Tuesday January 18; due Friday January 28, 2PM, at SS 1071

Required reading. All of Spivak's chapters 14 and 15.

To be handed in. From Spivak Chapter 14: 11, 15, 21. From Chapter 15: 2 (odd parts).

Recommended for extra practice. From Spivak Chapter 14: 7, 19, 25, 28. From Chapter 15: 2 (even parts).

In class review problem(s) (to be solved in class this Thursday). Chapter 14 problem 25 parts (a) and (b): The limit $\lim_{N \rightarrow \infty} \int_a^N f$, if it exists, is denoted by $\int_a^\infty f$ (or $\int_a^\infty f(x)dx$), and called an "improper integral."

(a) Determine $\int_1^\infty x^r dx$, if $r < -1$.

(b) Use Problem 13-15 to show that $\int_1^\infty 1/x dx$ does not exist.

Hint: What can you say about $\int_1^{2^n} 1/x dx$?