18.014 UNIT II: THE INTEGRAL

Friday, Sept. 15.

Lecture: Definition of the integral.

Read: 1.12, 1.14–1.17, pp. C.1–C.2.

Do: p. 70: 1bcde, 5, 10. Show the integral in 11, p. 70 is well-defined (i.e. independent of the partition).

Tuesday, Sept. 19.

Lecture: $\int x^p$; properties of the integral.

Read: pp. C.3–C.11, D.1–D.2.

Do: p. 39: 2ab; D.10: 2, 3; p. 83: 9, 16, 22, 23, 25.

Thursday, Sept. 21.

Lecture: Proofs of properties; applications.

Read: Notes D, pp. 88–90. On p. 113, read the *statement* of Theorem 2.7, and the Example at the bottom of the page.

Do: p. 70: 11abce, 12abce; p. 94: 11, 16; p. 114: 4, 16, 18ad.

Friday, Sept. 22..

Lecture: Piecewise-monotonic functions.

Read: 1.20–1.21; Notes E.

Quiz 1 will be on Friday, September 29. The quiz will be based primarily on the assigned exercises for *all the lectures but the first.* You should also be able to state the basic definitions and theorems precisely. I shall not ask you to reproduce proofs given in the text or lectures.

Hand in Fri. Sept. 22 in lecture. (7 points per problem)

1. Show the integral in 12, p. 71 is well-defined (independent of the partition). Is the following integral well-defined?
$$\int_a^b s = \sum_{k=1}^n s_k \cdot (x_k - x_{k-1})^2$$
2. D. 10: 1.
3. Evaluate $\int_2^6 [-x]dx$.

Date: Fall 2000.