

Due In Class: Thursday, November 20.

Reading: Finish reading Chapter 6 through the Fundamental Theorem of Calculus. Start reading Chapter 7.

Turn in the following problems. Exercise a.b refers to Exercise b in Chapter a of the textbook.

Problem A: Exercise 6.3

Problem B: Exercise 6.5

Problem C: Exercise 6.7

Problem D: Exercise 6.8

Problem E: A set $E \subseteq \mathbb{R}$ has *Lebesgue measure zero* if for all $\varepsilon > 0$ there exist countably many (open, closed, or half-open intervals) I_i with endpoints $a_i < b_i$ such that

$$E \subseteq \bigcup_{i=1}^{\infty} I_i$$

and

$$\sum_{i=1}^{\infty} b_i - a_i \leq \varepsilon.$$

Prove that the Cantor set P constructed in §2.44 of the textbook has Lebesgue measure zero.