

MA 544: Homework 5

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PROBLEM 5.1 (WHEEDEN & ZYGMUND §3, EX. 14)

Show that the conclusion of part (ii) of Exercise 13 (Problem) is false if $|E|_e = +\infty$.

Proof.

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PROBLEM 5.2 (WHEEDEN & ZYGMUND §3, EX. 16)

Prove (3.34).

Proof.

Lemma. $|P| = v(P)$.

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PROBLEM 5.3 (WHEEDEN & ZYGMUND §3, EX. 18)

Prove that outer measure is *translation invariant*; that is, if $E_{\mathbf{h}} := \{ \mathbf{x} + \mathbf{h} \mid \mathbf{x} \in E \}$ is the translate of E by \mathbf{h} , $\mathbf{h} \in \mathbf{R}^n$, show that $|E_{\mathbf{h}}|_e = |E|_e$. If E is measurable, show that $E_{\mathbf{h}}$ is also measurable. [This fact was used in proving (3.37).]

Proof.

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PROBLEM 5.4

Proof.



PROBLEM 5.5

Proof.

