MA 544: Homework 8

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Problem 8.1 (Wheeden & Zygmund §5, Ex. 2)

Show that the conclusion of (5.32) are not true without the assumption that $\varphi \in L(E)$. [In part (ii), for example, take $f_k = \chi_{(k,\infty)}$.]

Proof. ■

Problem 8.2 (Wheeden & Zygmund §5, Ex. 4)

If $f \in L(0,1)$, show that $x^k f(x) \in L(0,1)$ for $k = 1, 2, ...,$ and $\int_0^1 x^k f(x)\, dx \to 0$.

Proof. ■

Problem 8.3

Proof. ■

Problem 8.4

Proof. ■

Problem 8.5

Proof. ■

Problem 8.6

Proof. ■

Problem 8.7

Proof. ■

Problem 8.8

Proof. ■

Problem 8.9

Proof. ■

Problem 8.10

Proof. ■