

01325 Mathematics 4, Spring 2013

Week no. 5

Theory: In the week March 4–8 the lectures cover

Example 3.2.2, 1.7, 5.1, 5.2, Theorem 5.4.1

Exercises for the week March 4–8: Problem 4 (from the file with extra exercises), 5.5, 5.8, 5.4, 3.7, Problem 8, 1.16* (repeated)

Hint to Exercise 5.5: check that $L^1(\mathbb{R})$ is a *subspace* of the set of functions instead of checking all the vector space conditions.

Hint to Exercise 5.4 (ii): use the idea in the proof of Lemma 5.1.4 - you might even use the same functions.

I am confident that this program is enough, but if you want more, you can look at the following

Problem A Does the expression

$$\|\{x_k\}_{k=1}^{\infty}\| = \left(\sum_{k=1}^{\infty} |x_k|^p \right)^{1/p}$$

define a norm on $\ell^p(\mathbb{N})$ for $p \in]0, 1[$?

Homework 5, to be turned in no later than March 13: 5.3 (only for the functions f_6 and f_7), 5.18, 1.18 (prove Young's inequality like you did in Exercise 1.16),

Regards,
Ole