CORRECTIONS TO FUNCTIONAL ANALYSIS... BY *MICHAEL PEDERSEN*

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May 14, 2001

Page 3: Def. 1.3: $(x_n) \subset M$ is brief, but not a standard notation.

Page 4_3: The notation x_1 and x_2 is also used (implicitly) for the first two elements of the sequence.

Page 5_3: the estimate should be $\leq \frac{1}{\min(m,n)}$.

Page 7^2: there is no need to assume f real-valued.

Page 7^7: the interval $[0;1]$ is *compact*.

Page 12: Definition 2.3 should have *(or just metric)*. (The definition is equivalent to the one formulated in terms of open coverings.)

Page 15_3: The argument beginning with *Hence* is not correct in the mathematical sense, because it is meaningless to say that $f \in L^p$ as long as this set is not specified. (But even so it might be compelling enough.) Similarly the conclusion that $f_1 \in L^p$ is not justified.

Page 21_3: Should have $x \in V$.

Page 27_4: $\lim_m \|T_m - T_n\|$ should have been $\limsup_m \|T_m - T_n\|$.

Page 28^2: $\lim_m \|T_m - T_n\|$ should have been $\limsup_m \|T_m - T_n\|$.

Page 29^5: The statement beginning with *Moreover* should be deleted.

Page 32: This page should not be blank, but read as follows: *for all $x \in V$. Then*

$$\sup\{\, \|T_\lambda\| \mid \lambda \in \mathbb{R} \,\} < \infty. \tag{3.6}$$

Page 37^{12}: Should have: (and orthogonal....

Page 37^{14}: Here and in the following only Hilbert spaces are considered, for an inner product space can be shown to have a Hilbert space as its completion.

Page 38: After formula (4.12) in the last part of Proposition 4.5, one should add the supplementing conclusion *and that* $\alpha_k = (\sum_{j=1}^{\infty} \alpha_j x_j | x_k)$ *for every* $k \in \mathbb{N}$..

Page 40: In Proposition 4.9 *each* of the conditions (i), (ii), (iii) is equivalent to (x_n) being an orthonormal basis.

Page 44_1: A_0 should be multiplied by $\frac{1}{\sqrt{\pi}}$.

Page 45_3: The summand $e^{-ik\theta}$ should be deleted from every term of the summation.

Page 48_1: The summand should be $c_k \frac{1}{\sqrt{2\pi}} e^{\mathrm{i}\,kx}$.

Page 49^2: Should be $c_k = \frac{1}{\sqrt{2\pi}} \dots$.

Page 57^3: the first line of the proof should read: *We have only to show that* $\overline{T(H)}^{\perp} = T(H)^{\perp} =$.

Page 57_6: Remove the superfluous) after y_j.

Page 59^13: Replace *quadratic in* T by *"linear" in* x.

Page 63: The proof Theorem 5.10 should have the first paragraph replaced by: "To show that T is compact, let A be a bounded set in H. Given a sequence (y_n) in $\overline{T(A)}$, take for each n some $x_n \in A$ such that $\|Tx_n - y_n\| < 1/n$, as we may. It then suffices to show the existence of a subsequence x_{n_k} for which Tx_{n_k} converges to some y for $k \to \infty$, for by the definition of the x_n it follows that $y_{n_k} \to y$ for $k \to \infty$."

Page 64: In formula (5.9), the $\|$ in front of the summation should be removed.

Page $69_1$3: This line should end with *open set* (since B_1 need not be a ball).

Page 75: The last part of Example 5.7 is rather misleading, so delete from *Now consider.* ....

Page 79_2: Here $T - \lambda I$ should not be followed by).

Page 83: The Spectral Theorem needs corrections from the end of the second line; one possibility would be: "If H is infinite dimensional, the corresponding eigenvalues $\lambda_n \to 0$ for $n \to \infty$ and $0 \in \sigma(T)$; when also $R(T)$ is infinite dimensional, the non-zero eigenvalues (μ_n) can be numbered such that $|\mu_1| \geq |\mu_2| \geq \cdots \geq |\mu_n| \geq \cdots > 0$.

In any case every x in H has an expansion $x = \sum_n (\, x \,|\, e_n \,) e_n$ for which it holds that

$$Tx = \sum_{\lambda_n \neq 0} \lambda_n (\, x \,|\, e_n \,) e_n . \text{''}$$

Corrections in the proof are necessary too; eg. one cannot first find a sequence of non-zero eigenvalues with eigenvectors (e_n) and then append another sequence of vectors and end up with a sequence! [The appended vectors never get counted. If they are interlaced instead, $(|\lambda_n|)$ is not a decreasing sequence.]

Page 87: In Example 6.5, the expressions and calculations should have λ_n instead of (λ_n).

Page 89_6: the vector e_n is missing on the left hand side of the identity.

Page 95_8: The summation should be over $|(Ke_m|e_n)|^2$.

Page 111: In formula (9.1) the integrand should be $|f(x)|$.

Page 116^2: The integer should be k instead of m.

Page 266: Exercise 99 should be formulated: Let T be a closed linear operator *in* ....

Page 267: In Exercise 107 the factor $\frac{1}{2^2}$ should be in front of $(x_1 + x_2 + x_3)$.