Errata for "Real Analysis" by Royden

Source: http://sci.tech−archive.net/Archive/sci.math/2009−05/msg00967.html

- *From*: Geoff <geoffreymath@xxxxxxxxx>
- *Date*: Tue, 12 May 2009 14:54:55 −0700 (PDT)

Hello, does any one know of an errata to "Real Analysis" by Royden? I have googled for one many times and the most I have found is one that has 5 corrections. So, I just created my own and it has all the errors I have found or that have been pointed out to me somehow. If you know of any other errors or list of errors, please add them to the list.

Errata for 3rd edition of "Real Analysis" by Halsey Royden

P26 Proof of Proposition 8 refers to Problem 23, should be 24.

P72 Footnote says [20], should be [21].

P102 Problem 3 a) asks you to prove something that is not true. It can be fixed by changing local maximum to local minimum. Problem 3 b) would also need to be changed.

P111 Problem 17a is not correct. A counterexample is
F(x) = x^{1/3} and g(x) = x^3 sin^3 (1/x) for x not equal to 0 and 0 for x = 0.
One fix: Require also that g is monotone increasing.

P120 The equality statement in Minkowski s inequality is currently meaningless as there are always nonnegative constants alpha and beta such that beta f = alpha g (alpha = beta = 0). I believe the fix here is to require at least one to be nonzero as well, as in the statement of Holder s inequality. And, this is both necessary and sufficient, whereas the book only says its requirement is necessary, making it more meaningless.

P128 Definition of Delta−approximant should add
"for x in (xi_k, xi_{k+1)"

P176, proof of Proposition 5, Line 4 says $\empyset \in ____" and it's just blank. This should be a script T.

P178 Problem 17 defines a collection of sets B_{s, n}. In the definition, it says k geq m but m is never mentioned anywhere else. I believe it should be n since n is never mentioned in the definition

as is.

P179 says "see Problem 30" right above Urysohn's metrization theorem. Should be "see Problem 48"

P181 Problem 24 e and f are wrong. f should define g = phi k / (1 − phi |k|). Then part e should use the set {x : |k(x)| = 1} to work with the changed function g.

P182 Line 8 of Section 4 says A subset E of X is said to be connected when it is a connected space in the topology it inherits from X: Thus E is connected if there do not exist open sets O_1 and O_2 in X, with E \subset O_1 \cup O_2 and E \cap O_1 \cap O_2 = \emptyset. The first definition is right but the second part is not. There are trivially such sets, O_1 = X and O_2 = \emptyset, for any E. So, we need to also give the additional condition that E \cap O_1 and E \cap O_2 are nonempty.

P183 Problem 8.35c, Hint should say "H be the set of points of G", but the second of is not present.

P185 Line 7 "We call the space T" should be "We call the space Z".

P185 Line 8 has <X_alpha, _alpha> which should be <X_alpha, T_alpha>.

P196 Problem 12 starts with a set Y but Y is never mentioned again. It should be X.

P235 Problem 31 is labeled 13.

P247 4 lines above Prop 27, should be "for all nu" instead of just all nu

P248 6th line of second paragraph Hilbert should be Hilbert space

P250 Problem 55 mentions a function f but says nothing of it. I believe it should say |f(x)| \leq K ||f|| for all x \in [0, 1] and f \in S. (and f \in S added).

P260 Proposition 7 should add that the functions in the sequence are nonnegative. Two reasons for this are 1. The proof is Exercise 10 on P262 and the hint they give ensures this is true. 2. It is useful and needed in at least a couple exercises, but probably more.

P262 Exercise 10 says For each pair <n, k> of integers but they are both required to be positive, not just any integer. If k were negative, E_{n, k} would be negative and n is the index of the sequence.

P279 Problem 34, part b should say If nu_1 << mu and nu_2 << mu, then Otherwise, the Radon Nikodym theorem does not apply so the

derivatives are meaningless.

P 330 Problem 12.55 part c talks about a set with m_\alpha E > \infty. Well, that is impossible. My professor said this exercise has multiple problems but I do not know what they are, let alone how to fix them.

Further, here is the only link I have found on the web with any other errors:
http://www.math.harvard.edu/~ctm/home/text/class/harvard/114/07/html/errata..html
I put a two of the basic ones on this list already. There are 3 more not on this list as I have not checked their validity. In fact, I believe my professor did Problem 8 on P192 without assuming Hausdorff, so that may not actually be an error.
.