Errata and Suggestion Sheets

Advanced Calculus, Second Edition

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Location	Error
P.11,ln.38	"$b^2 < r$ " should be " $b^2 < c$ "
P.13,ln.1	for " … number a and b, " write " … numbers a and b,"
P.16, 1c	" $\mathbb{Q}\backslash\mathbb{N}$ "should read " $\mathbb{Q}\backslash\mathbb{Z}$. "
P.18,ln.14	"$1-T$ " should read "$1-r$."
P.19,	The Geometric sum formula. Left hand side is not defined when $r = 0$.
P.30,32	To slightly improve clarity, the Linearity Property should come before Theorem 2.13.
P.32,ln.16	" $p(x) = \sum_{i=0}^{k} c_i x^i$ " should appear "$p(x) = c_0 + \sum_{i=1}^{k} c_i x^i$ "
P.36,ln.16	" $x = (a+b)/2$ " should be "$s = (a+b)/2$ "
P.38,	Theorem 2.25*(i)* and *(ii)* should have n in NATURAL numbers $\mathbb{N}$.
P.40,ln.2	" $s_4 + \frac{1}{2} = 1 + \frac{3}{2}$ " should read "$s_4 + \frac{1}{2} \geq 1 + \frac{3}{2}$."
P.54,ln.9	"sequence($\{-1/n\}$" should read "sequence $\{-1/n\}$"
P.57,ln.14	" … $f + g: R$ and …" should read "…$f + g: R \to R$ and…"
P.62,ln.7	"the value 0." Should read "zero or negative values."
P.67,ln.21	"$1/n$" should read "$-1/n$."
P.67,ln.22	"$2 + 1/n^2$" should read " $-2 - 1/n^2$."
P.67,ln.24	" $(0,1)$ "should read "$(0,2)$."
P.73,	Theorem 3.22 in the first sentence after " *ii* ", it reads "…criterion at the domain D;…" and it should surely read "…criterion on the domain D;…"
P.78,ln.22	"monotonically increasing "should read " monotone"
P.81,ln.23	"$\mathbb{D}$" should appear " D. "
P.90,ln.14	" $\lim_{x\to 0, x>0} \frac{f(x)-f(0)}{x-0} = -1$ " should read " $\lim_{x\to 0, x<0} \frac{f(x)-f(0)}{x-0} = -1$. "
P.90,ln.1&P.91,ln.1	"$\ldots + x_0^{n-2} + x_0^{n-1}$ " should read "$\ldots + x x_0^{n-2} + x_0^{n-1}$. "
P.94,#3	The function value $f(0)$ is defined twice.
P.99,(4.8)	"$x - x$ " should read " $x - x_0$ " in tow denominators.
P.107,ln.8	"$x_0 < x_0 + \delta$ " should appear "$x_0 < x < x_0 + \delta$ "
P.107,ln.15	for " In Section 9.5," write " In Section 9.6,"
P.112,ln.3	" $g^{(n)}(x_0) = n!$ " should appear " $g^{(n)}(x) = n!$ "
P.112,ln.14	" $\frac{f^{(n)}(x_n)}{g^{(n)}(x_0)}$ " should appear " $\frac{f^{(n)}(x_n)}{g^{(n)}(x_n)}$ "
P.120,ln.15	for "inverse function $\mathbb{R}$." write "inverse function on $\mathbb{R}$. "
P.128,ln.11	" $C(2z) \leq 0$" should appear "$C(2z) < 0$"
P.142,ln.1	for " … 1988), a clear …" write "…1988), is a clear…"

P.143,	Under 6.14 you should refer to Darboux sums, not Riemann.
P.144,ln.10	the second " (6.19) " should be " (6.20). "
P.145,ln.3	for " $[a,b]:\ \mathbb{R}\to\mathbb{R}$ " write " $f:[a,b]\ \to\mathbb{R}$."
P.149,#4b.	for " (b– a)/2 " write " $(b^2 - a^2)/2$. "
P.150,ln.10	for " The f is " write " Then f is. "
P.152,ln.5	for " $L(f,P_n)$ " write "$U(g,P_n)$. "
P.152,ln.12	for "… $\le L(f,P) + U(g,P)$. " write "…$U(f,P) + U(g,P)$. "
P.153,ln1	for "…$\le U(f+g,P_n) \le L(f,P_n) + U(g,P_n)$." write "…$\le$ $U(f+g,P_n) \le U(f,P_n) + U(g,P_n)$."
P.153,ln.21	$\mathrm{U}(\alpha f,P_n)$ Formula is in conflict with formulas 6.31. To avoid that, add the following statement: " The above formula is consistent with formula 6.31 because $\mathrm{U}(\alpha f,P) = \mathrm{L}(\alpha f,P)$ for all P if $\alpha = 0$."
P.156,ln10-12	for " $[x_{i-1} - x_i\ ]$ " write " $[x_i - x_{i-1}\ ]$ "
P.160,ln.2	for " Section 7.4. " write " Section 7.3. "
P.162,ln.8	for " $L(f,P)$ " write " $L(f',P)$. "
P.162,ln.8	for " $R(f,P)$ " write " $U(f',P)$. "
P.164,#3	for " $\int_a^b f\ = 4$ " write "$\int_2^6 f\ = 4$ "
P.169,ln.7	" from bottom(7.2)" should be " (7.1)"
P.169,ln.8	" from bottom(7.3)" should be " (7.2)"
P.180,	Possible typo: I would delete $\mathrm{H}(\mathrm{d}) = 0$. Not needed in argument, and not proved .It is really necessary to change 4.19 slightly.
P.187,ln.11	for " index $i \ge 1$ " write " index i such that $1 \le i \le n$ "
P.189,#8	for " Supose " write " Suppose"
P.191	In the caption of Figure 7.2 ; Reads "… trapezoid…" rather than "…trapezoid…"
P.201,ln.4	for " $x = 0$" write " $x_0 = 0$ "
P.201,ln.8	for " $x = 0$" write " $x_0 = 0$ "
P.201,ln.12	for " $x = 0$" write " $x_0 = 0$ "
P.201,ln.7	for " $x = 1$" write " $= 1$ "
P.202,ln.10	for " strictly increasing…" write " strictly decreasing…"
P.202,ln.1	for " at $x = 0$ " write " at $x_0 = 0$."
P.203,ln.10	for " $(x - x_0)^n$ " write " $(x - x_0)^{n+1}$. "
P.205,ln.3	from bottom "$n > 4$" should appear "$n \ge 4$."
P206,ln.1	for " $\ln(n+1)\ = \ln 1$ " write " $\ln(n+1) - \ln 1$. "
P.217,ln.6	for " number n" write " number k "
P.221,ln.10	for " about $x = 0$" write " about $x_0 = 0$."
P.225,ln.6	for " $1 \le k \le n$. " write "$0 \le k \le n$. "
P.233,ln.2	for " for index " write " for every index "
P.235,ln.9	for " $(0,c)$ " write " $(0,b)$ "
P.240,ln.2	for " $\lim_{n\to\infty}\left(\frac{\mathrm{a_k}}{\mathrm{b_k}}\right)$ " write " $\lim_{k\to\infty}\left(\frac{\mathrm{a_k}}{\mathrm{b_k}}\right)$ "
P.241,ln.12	for "…value is 1." Write "…value is 1,"
P.241,Fig.9.2	for "…$\lim_{n\to\infty} 1^n\ =\ 0$. " write "…$\lim_{n\to\infty} 1^n\ =\ 1$."
P.242,ln.1	for "…natural number k " write "…integer k."

P.243,ln.6	from bottom " $2/N < x$. "
P.243,ln.8	for "…number n,…" write " number $n \geq 2$,…"
P.243,ln.9	for " $f_n(0) = f(2/n) = \cdots$" write "$f_n(0) = f_n(2/n) = \cdots$"
P.243,ln.10	for " and $[2/n\ \ ,0]$ " write " and $[2/n\ \ ,1]$."
P.243,Fig.9.4	for " $\left(\frac{1}{n}\ ,\ 1\right)$ " write "$\left(\frac{1}{n}\ ,\ n\right)$. "
P.251,ln.4	for "$4[b\ -\ a]$ " write "$[4(b\ -\ a)]$ "
P.251,ln.8	for "$6[b\ -\ a)]$" write "$[6(b\ -\ a)]$"
P.257,ln.4	for " Cauchy on A " write " Cauchy on A "
P.265,Fig.9.6	left figure : for " $(l, 2l)$ " write "(l, l)."
P.265,Fig.9.6	Two comments :(1)It would be nice to use the same script l as in the surrounding text. (2) It would be nice if the graphs had the same scales for both $x-$ and $y-$axes.
P.266,ln.16	for " $\sum_{k=1}^{\infty} h_k(x)$ *write* " $\sum_{k=0}^{\infty} h_k(x)$ "
P.279,ln.6	for " dist$(\boldsymbol{u}, \boldsymbol{u}')$ and " write " dist$(\boldsymbol{u}, \boldsymbol{u}') = 0$ and"
P.286,ln.1	from bottom " $\bigcap_{i=1}^{k} c_i$ " should appear " $\bigcup_{i=1}^{k} c_i$ "
P.302,ln.7	for " $A : \mathbb{R} \to \mathbb{R}$ " write " $f : A \to \mathbb{R}$. "
P.324,ln.8	for " $f : \mathbb{R} \to \mathbb{R}$ " write " $f : I \to \mathbb{R}$. "
P.355,ln.4	Is " $\boldsymbol{e_i}$ " defined in the text (other than p.281,H.W.#2)?
P.373,ln.11	for " $\left(\frac{1}{k}!\right)$ " write "$\left(\frac{1}{k!}\right)$. "
P.375,ln.8	for " h " write " $\mathbf{h}$ "
P.391,ln.8	for " $\nabla f(x) = 0$ " write " $\nabla f(x) = \mathbf{0}$ "
P.452,ln.3	"Since the point $(\mathbf{x_0}, \mathbf{y}_0)$belongs to V "should be replaced by " Since the point $(\mathbf{x_0}, \mathbf{0})$ belongs to V."
P.474, ln.10	the word " integrable" comes before it is defined (p.475).
P.479,ln.14-15	for "in any one of the$\boldsymbol{P}_k(\mathbf{J})$'s " write, perhaps, "in all of the corresponding$\boldsymbol{P}_k(\mathbf{J})$'s "
P.479,ln.16	for " $\sum_{\mathbf{J}\text{ in }\mathbf{P}} U(\ldots) - L(\ldots)$ " write "$\sum_{\mathbf{J}\text{ in }\mathbf{P}} [U(\ldots) - L(\ldots)]$."
P.479,ln.14-21	It does not seem that $\boldsymbol{P}_k$ can be chosen as indicated**.** One suggestion is to**:** Let $\boldsymbol{P}_k^*$ be the partition of $\boldsymbol{I}$ induced by the $\boldsymbol{P}_k(\mathbf{J})$'s (By this we mean that for all the **J**'s in a common " row" of $\boldsymbol{P}$ **,** we form the union of all the partition points of a common edge of the corresponding $\boldsymbol{P}_k(\mathbf{J})$'s. This union then forms one part of the partition $\boldsymbol{P}_k^*$ for that corresponding edge.) It should be clear that for each **J,** $\boldsymbol{P}_k^*(\mathbf{J})$ is a refinement of $\boldsymbol{P}_k(\mathbf{J})$ so that $U(f, \boldsymbol{P}_k^*(\mathbf{J})) - L(f, \boldsymbol{P}_k^*(\mathbf{J})) \leq U(f, \boldsymbol{P}_k(\mathbf{J})) - L(f, \boldsymbol{P}_k(\mathbf{J}))$ for all **J** and hence

	$U(f,\boldsymbol{P}_k^*) - L(f,\boldsymbol{P}_k^*) = \sum_{\mathbf{J}}[U(f,\boldsymbol{P}_k^*(\mathbf{J})) - L(f,\boldsymbol{P}_k^*(\mathbf{J}))]$ $\leq \sum_{\mathbf{J}}[U(f,\boldsymbol{P}_k(\mathbf{J})) - L(f,\boldsymbol{P}_k(\mathbf{J}))]$ $< \boldsymbol{m}\frac{\mathbf{1}}{\boldsymbol{mk}}$ $= \frac{\mathbf{1}}{\boldsymbol{k}}$ Thus, $\mathbf{lim}_{k\to\infty}[U(f,\boldsymbol{P}_k^*) - L(f,\boldsymbol{P}_k^*)] = 0,$ And therefore, by the Archimedes-Riemann Theorem, the function f is integrable on $\boldsymbol{I}$.
P.479,ln.19	for " $-L(f,\mathbf{P}_k]=$ " write " $-L(f,\mathbf{P}_k)]=$ "
P.488,ln.5	for "vol $\mathbf{J}'$ "write "vol $\mathbf{J}_i'$ " (twice)
P.488,ln.11	for "For positive number a and b, show that the ellipse " write " Show that the set "
P.488,ln.7	for " that the ellipsoid " write " that the set"
P.489,ln.6.7	for " in the interior of **J** " write " in the interior of $\boldsymbol{I}$ "
P.491,ln.2	for " $= \int_{\mathbf{J}} \hat{f}$, " write " $= \int_{\mathbf{I}_1} \hat{f}$,"
P.493,ln.15	for " $\{(\mathbf{x}, g(\mathbf{x}))$ write "$\{(\mathbf{x}, f(\mathbf{x}))$ ... "
P.499,ln.10	for " (19.3) " write " (19.1) "
P.500,ln.2	for " of m_i and M_i " write " of M_i "