Corrections and clarifications as of Nov. 12, 2009.

This is the complete list I have so far, including the smallest changes made since last year.

No major problem has been reported, but many typos, incorrect constants, undefined symbols, too hard exercises etc. have been. Many of these are obvious, but some can be quite confusing.

Special thanks to B.L.J. Braaksma, G. Luo and H. Park.

I also added further explanations at places were the text was too terse. For convenience, the right link, "See",

sends to a corrected page.

I would appreciate receiving information any errors or unclear points at

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- page 3: in (1.7) the sum is just the definition of $\tilde{f}$.
- page 10 line first displayed formula $z^2$ should be $z^4$.
- page 12 (1.51) replace ",=" by ",=-z".
- page 14 (1.52) "x" in the integrand should be "(-x)". Replace "$e^{(-np)}" by "e^{(-xp)}".
- page 15 l. -1 "first and third" should be "first".
- page 20 l. 1 after title: "p" should be "F". (i) "analytic H" should be "analytic in H". Prop. 2.7 in "$\theta=\pi/2$" and "$\theta \le \pi/2$" "theta should be "$| \theta |$"; last line after "transform" add "(in distributions, if $\text{SLF}$ is not in $L^1$)". See
- page 22 line -3 (LF)' should be -(LF)'
- page 32 line -1 "j=0" should be "n=0". "and a0=1" should be added after "convergence" in l -7. Line -3 "nonincreasing" should be "nondecreasing". See
- page 30 (3.31): ds should not be in the exponent...
- page 33 Lemma 3.41 line 2: delete "of f". displayed formula in the prrof: int^1 should be int^ \epsilon, \epsilon > 0 small. Ex. 2 (a) add "conditions" after necessary. See
- page 34 Prop. 3.44, line -2 formula should be "$H(u)=f(\phi(u)) \phi'(u) u^2=-g(s)$". See
- Page 37 "n-1" can be improved to "n". Formula after (ii), "ixs" should be "-ixs"; "\phi" below should be "1", "$\sqrt{2}$" should be "2". See
- page 40 line 4 line 4: by "oscillation" it is meant "oscillation in s". See
- page 42 line 8 replace "t^(-m)" by "n^(-m)". 4th displayed formula "(-e^{\{i\pi x\})" should precede the expression. See
- page 45 2 lines above (3.89) z should be t. e^{i \xi} should be the prefactor in both integrals in (3.89). See
- page 47 (3.92) replace "dp" by "dt". See
- page 49 line 10 delete "in (A)". See
- page 51 (3.103) "x^(3/2)" should be "-x^{3/2}" and in the line below, "s" should be "-s". Line -4 replace "n terms" by "m terms". See
- page 52 Exercise 3.113 is simple, it should probably not be starred. See
- page 53 in the second displayed formula from below: replace "-k-1" by " -k". See
- page 59 (3.139) "||Y||_{\infty,L}\) is missing in the third expression. See
- page 60 (3.142) A factor of 2 is missing in front of the "[". Remark 3.146 in text: "t=tau.". should be "s=tau.."; "+z\phi" should be "-z\phi"; (3.147) replace "\int" by "2 \int". See
- page 61 In (3.152) Remove "n^n". See
- Page 64 after 3rd displayed formula, "x" should be "x-x0" "p^2" should be "(x-x0)^{2p}". 1-7: replace "approximately" by "approximated". See
- page 65 In the example in the note, the indications should be different, see correction. See
- page 67 line before (3.177) "as though E was known," "as though E was known; with x0y(x0) small we write. l-2 before (3.176) "f" should be "y". See
- page 69 In (3.185) last expression should be replaced by its negative. See
- page 71 line 1 "singular perturbation" is the usual terminology rather than "irregular perturbation". See
- page 72 In (3.198) "plusminus epsilon" should be "(minusplus 1/2) epsilon". In (3.199) "+ \epsilon" should be "\plusminus \epsilon". See
- page 73 line 10, x_1=x_0+\epsilon. In (3.205) there should be a "plusminus" in front of "\sqrt", ") +" should be ")", "z" should be "-epsilon". See
- page 74 In (3.208) Insert "\psi" after "alpha x". See
- page 76 line 3 "J(\epsilon)" should be "|J(\epsilon)|" and epsilon^{-1} should be epsilon. 1. 5 in the Note: "a^2" should be "alpha^2". Displayed formula in note: replace alpha by 1/alpha and |alpha^3| by |a|^3. 1.14 "alpha" should be "sqrt(alpha)". 1-8 2 should be 4 See
- page 77 In (3.222) Replace -1/4 by 1/4. See
- page 78 formula on line -9: Replace "M" by zero. Following line add at the end ", with \|\psi\|=1". See
- page 79 line -2 replace "we and so" by "and so". See
- page 81 line 12 Delete "works of". See
- page 83 Change "formalizable)" to "formalizable". In (4.5) and below "\alpha" is a better notation than k. See
- page 84 l2: "\in Z" should be "\in R". "n-1 in N" is better written as "n in N^+". See
- page 85 In (4.12) Replace "k" by "j". See
- page 86 15 after "Also", add "if S an T have no constant term, then".
- page 90 14 after 4.1a.5 Proposition "4.17" should be "4.28".
- page 91 In (4.44) replace "-k" by "-(k-1)". y_0 should be y_1^{-1}\{1\}. See
- page 92 "of solutions" should be "of"; in (4.46) x^2 should be x^3 and x^3 should be x^5. See
- page 93 l-5 "level zero" is better than "order zero". See
- page 94 line -3 and page 96 point 20: "exponential-free" should be "log-free". End of point 11, it would be useful to add "see p. 86". (4.50) \bf k should be -\bf k.
• page 95 l. -8 ")" should be ")". p.18: -k_j should be k_j. l4 in (d): "\cal T" should be "\tilde{\cal T}_1".
• page 96, 20. "exponential-free" should have been "logarithmic-free". See
• page 99 In (4.61) "(n+1)" should be "(n)". In Exercise 4.62 first displayed formula: "s" should be "f". Line above it: the superscript should be "n-1". See
• page 100 above (4.77) and in (4.68) "\tilde{t}(S)" should be "\tilde{t}(S')". In (4.67) "k=2" should be "j=2", "^j" should be "^(j-1)". In (4.70) "l+1" should be "l". l2 above (4.67), before "Then" add "see p. 93". See
• page 101 In (4.72) "k=0" should be "j=0". In (4.74), add +(1/2)f(n) to the rhs. In (4.79) f(1/n) should be f(1/k) See
• page 102 Exercise 4.84: it is understood that Re (x^(5/4))<0. Or, one can choose -\ln\delta instead, and then Re (x^(5/4))>0.
• page 106 line -2 a "ds" is missing in the integral. See
• page 108 l.1 in Proof: "\rho^-1" should be "\rho". In l.10 the larger size "\nu" should be removed.
• page 111 middle line in (4.126) "+" before the second sum should be preceded by "=(last integral on prev. line)". line -1 "{np}" should be "{(n+1)p}". See
• page 112 (4.128) "arg (n)" should be "arg n". l-14 "\sigma B" should be just "B". See
• page 114 formula in Remark 4.129 simply be "const^(\cdot k)\langle(rk)!/(k!)^r< const ^k". In the line before it, "if epsilon>0" becomes redundant. In Def. 4.130, "C_3,C_4" should be "C_1,C_2". See
• page 116 last displayed formula: insert e^{-nu Re p} inside the norm and e^{nu Re p} outside it. See
• page 117 first formula "||Fe^\{nu|p|\}||" should be ||Fe^\{\nu|p|\}||||F||_{nu;S_a}". "px+nu |p| gamma" should be "|x| p \gamma +\nu p +\nu a". On line -5 "sigma " should be "1/sigma". In formula -2 the denominator "N-1" should not be there. l.14 f(x) should be f(1/x). See
• page 118 (4.148) e^{-x} should be e^{-xp}; a prefactor (px)^\{\beta-1\} is missing; in the line below it \beta=1 should be \beta =1. In Ex. 4.149, "from" is better than "to". See
• page 119 l. 4, "many operations" is better than "operations".
• page 122 l. 7 "is has" should be "has". In the paragraph below (4.155) SY should be S(Y). See
• page 123 first line in the proof: add "in B" after "sequence". l-9 in the proof "decreasing" should be "increasing". In the Remark "{x_j}_{\in \ldots}" should be "{x_j}_{j\in \ldots}"
• page 124 Exercise 3, "R^n" should be "Z^n". In the proof of Coroll. 4.157, the directions got reverted: "larger" should be "smaller" and "<" should be exchanged with ">". (prec and succ rather). See
• page 125, the ref. to 4.168 should be instead to 4.156, and in the next line, "k_2" should be "k_1". In 8, "G" should be "\caligraphic{G}". See
• page 127 (4.167) "+1" should be "+x^2" in the first denominator. Lemma 4.168 "greaterequal" should be "lessequal". See
• page 128 l 11 "beta\in beta" should be "beta in Omega". In Definition "all if" should just be "all". In point 20. "is convergent" is redundant and "->0" should be "-> infinity" in its last formula. Point 21, "p" should be "k". See
CORR5

- Page 131: "...mu_n^{k_n}" should be appended before the end of (4.179). In 36. "Z" should be "Z^\n". In (4.183) there should be no "triangle s"; "s_k" should be "mu_k". See
- Page 132: Def. 4.186 "A_\" should be "\{caligraphic T\}_{A_\}"; \tilde{A}_m should be "\{caligraphic T\}_{A_m}"; Exercise 4.192, "sup p>0" should be "for any p>0". See
- Page 133: "c_k" is missing in the sum. In the last formula "J^q" and "J" should be "J^{q+m}" and "J^m" respectively. 39. "is given" is repeated. See
- Page 135: "L_2" should be "L_1". See
- Page 137: In point 2, "N" should be "N-1". In (d) "L_1 and L_1" should be "L_1 and L_2". See
- Page 138: point 7, erase "if T^[m]->0". See
- Page 139: point 11: "Then" should be "Then, for some b and C" and "x^b" should be "Cx^b" in (4.204). In exercise 4.205 by "valid" is meant "compatible with the topology". (4.207) "e^{-k a L}" is missing in the sum. See
- Page 141: Prop. 4.213 delete "(1+s)". Last sentence on last line: T_2 should be T_3, T should be T_2. See
- Page 143: first formula, "n+1" should be "n+2". In point 1. ":=mag" should be "= - mag". In the line above "L'_\omega\" should be "L'_\omega/L'_1". See
- Page 144: second proof "<<" should be ">>". Exercise 4.230 "y_0" should be "\tilde{y}_0\". See
- Page 145: 1-12: One should be more precise: "If f and g are, say, in L^1" 1-2: f:R^+ should be f:R^+ + ->C.
- Page 146: 16: "te^{-i\phi}\" should be t e^{i\phi}. See
- Page 147: "ore' should be "or". In (5.13) "n" should be "k". See
- Page 149: line before Prop. 5.20: "p<|a|\" should be "p<|alpha|"; 2 lines below: "K" should also be part of the subscript of A; (5.23) "\" should be "F". In (5.23) "\epsilon\" should be "\epsilon \|F_1-F_2\|_\nu". Note that B is a set of functions. See
- Page 150: After title, to be more precise "With \tilde{y}_0\" the asymptotic series of LY_0 (note that \tilde{y}_0=\tilde{y}\" in (4.56)); 1-11 add (with C=1) after 1+o(1); add "k\ge 2" at the end of (5.30); clarify: "cf. (5.13)" at the end of the next sentence. See
- Page 151: l. 13: the superscript on \phi looks better if placed immediately after \phi. Prop. 5.36 the last reference (5.33) should be (5.34). See
- Page 152: L. after (5.41) add "with C=1". In (5.43) -x should be -t; 4 lines below, replace "C_+=C with C_+=0. See
- Page 153: (5.46) the upper limit of int. should have "-i epsilon\" instead of "i epsilon\". "Y^+\" should be Y^-\". phi. Par. starting at l. 10: "away from p=0" should have been mentioned. 1-9 th difference should be "Y^+SY_1". See
- Page 155: "\infty\" is clearer than "+\infty\". In (5.55), t^\tau(5/3) is assumed to have negative real part. Two lines after (5.56) should have "u=Bx^{1/5} h" instead of "h=Bu^{1/5}". See
- Page 156: L-2: \bf \lambda should be \bf \tilde{\lambda} \{lambda\}
- Page 157: (5.62): Line below "arg(N_{\{jk\}}\" should be "arg(N_{\{jk\}}\". 1. 7: "Satisfy (1) and (2)\" should be "Satisfy (5.62)."
- Page 158: on l. -2 it should be "d_j=\{x:arg(x)[..."
- Page 159: 1.6: l. 6: the supplementary restriction reads better as follows: "$\arg\gamma\in\max$
\{\arg \lambda_j : \arg \lambda_j < 0 \}, \min \{ \arg \lambda_j : \arg \lambda_j > 0 \}$, now with $\arg$ in $\mathbb{S}(\pi, \pi)"$.  l. 8 $R'$ should be $R_j$, $R_1$ should be $R$.  l. 9 $R$ should be $e^{i \phi} R$.

- page 1-7: 160 and elsewhere: small $z \neq 0$ is used as usual, as small $|z|$. phi-0 means as usual phi - $\epsilon$ for any small $\epsilon > 0$.
- page 162 l 11: "Ecalle" should be added before "median average". This notion is not discussed here. l -1 C should be $\gamma$.
- page 163: l.2 and l. 8: replace $SS$ by $SR^+$. page 164 l -8: s! should be $(s-1)!$; on the next line, $M$ should be $M-1$.
- page 165 l 14., $g_0!$ should be $g_0! \cdot$ (where $\cdot$ is usual multiplication).
- page 167 perhaps one should clarify "beta=-alpha, see" before (5.61).
- page 168 l. -2, $\tau_j$ should be $\tau_{-j}$.
- page 169 \tau in (5.118) is defined in (5.116). $H \circ \tau_{-k}$ should be deleted from (5.118).
- page 171 l 1-18: "near each singular point" is better than "at singular points".
- page 172 l 11 after (5.135) $x^0_{\{1\}}$ should be $x^0$; first displayed formula after (5.136), the middle inequality is not needed.
- page 173 $||f||_u e^{\nu |p|}$ must appear in the last term too.
- page 174 last line in Prop. 5.145 "to $v$" should be "to $N(v)$".
- page 175 (5.150) middle formula, the last $C_2$ should be $C_2/ \nu$ as well.
- page 177 l. 5, "$z$" should be "$|z|$".
- page 178 (5.164) "$x$" should be "$p$".
- page 180 l. 2 in (5.176) $s-z$ should be $(t-s)$; last line in (5.176) $F_1(0)$ should be $-F_1(0)$; the denominator of the integrand should be $s^2$.
- page 182 l -1 $Y(p-s)$ should be $Y^{ba}(p-s)$.
- page 183 switch _{u2} and _{\nu} in the morms in the first displayed formula. The analysis in the proof is only done for beta \neq 1.
- page 184 (5.193) add a "-" after the first ". Ditto in (5.195).
- page 185 : first line after 5.10h: replace $Y_p$ by $Y(p)$.
- page 186 l 10 delta _0 should be delta.
- page 187 l. 7, $\cal V$ should be $\cal Q$.
- page 188: Prop. 5.215: $d_m$ should be $D_m$. the last $G_1^*$ in (5.216) should be deleted. In (5.217), modulus should be $|c_0^{|-l||}}$ should multiply the summand after the first inequality. l. -5 $R_1$ should be $T_1$. See
- page 189: (5.218) $\hat A$ should have been $(\hat A + \alpha_1)$; $(\hat A + \alpha_1)$ should multiply the integral after ". Ditto after (5.219) replace Q1 by -Q1; l. -2 replace Q_k by -Q_k.
- page 192: l-3 $\cal T$ should be $\cal Q$.
- page 196 l. 8 "below(above)" should be "above(below)". $H \circ \tau_{-k}$ should be deleted from (5.258).
- page 197: After (5.267): A note with calculation details has been added. l-2 above (5.268) "(m,m +1)" should be "(j,j+1)"; l3 after (5.268) $\cal V$ should be $\cal Q$. See
- page 198 (5.271) is cleaner if applied at (p). "by (5.270)" clarifies the argument. See
- page 199 I added more details before (5.275). In (5.276), $g(x,y)= the sum in the second equality. Then the second equality is not needed anymore. See
- page 200 (5.279): lambda(1-l) should be lambda -l.
\begin{itemize}
\item page 201 l.1: \(j=1\) should be \(i=1\). (5.287) replace "\(D_j^*\)" by "\((g_{0j}\cdot+D_j^*)\)". In (5.288) "\(m\)" should have been "\(j\)".  See
\item page 202 l.2 "where =" should be "where". In (5.290) and formula below it: the last \(V\Lambda\) should be \(\Lambda V\). l.12. "has a unique" should be "has a". l. -5 delete "where" and add, after "\(c_i\)", the new coefficients \(A_j^{[1]}\) vanish". See
\item page 203 l.2 add \(F_k\) after "function". In (5.295) \([0,k]\) should be \([0,k+1]\).
\item page 204 in (5.304) \(\Delta i\) should be \(\Delta j\) See
\item page 205 l.12 \(D_n\) should be \(D_n X D_n\). See
\item page 206 l.6 add "from this point on, we rely to some extent on [23]. l. -7 add "[23]" at the end of the sentence.
\item page 210 l.4 dense in D should be "dense in \(D'_{\{m,\nu\}}\)". Formula (5.332) the exponent "\(p\)" should be "\(mn\)". The constant in front of \(||f||\) changes. In (5.333) replace = by \(\le\). the last exponent "\(m-1\)" should be "\(-m+1\)". l. -3 3rd sum, the order "\((mk)\)" should have been outside the parenthesis. See
\item page 214 in (6.12) and (6.13), the more general "\(C\xi\)" should replace "\(\xi\)".
\item page 216 the rhs of (2.16) should be "\((-\xi/5)F_{\{k-1\}}-3/5F_{\{k-1\}}+3 \text{ sum}(F_{\{j1\}}F_{\{j2\}}F_{\{j3\}})\)"
\item page 217, in Prop. 6.19, \(n=1\) and \(y\) is the solution of (5.51). 2nd line before (6.23) \(\xi_s=\xi_0\); l.6 "in X" should be "in (6.20)". 1.4 "\(1/\xi(x)\)" should be "\((-\xi(x))\)"; next line, \(-\oint\) should be \(\oint\); l -2 omit "from Lemma 4.158". See
\item page 218 l.11 after title" add "See Lemma 6.35 below". Fig. 6.4 should be Fig 6.3.
\item page 219 line 10: delete"\(\text{Let } f=F0-1/3\); it is clearer if I add "and (6.14)" after "(6.53)".
\item page 220 l.6 add "1/3+" before \(\xi\).
\item page 224 (6.47) and below it "\(\bf s\)" should have been "\(\bf y\)".
\item page 228 I added a sentence before Proposition 6.62, clarifying the notation. See
\item page 229 l.2, Theorems 1 and 2" should have been "Theorem 6.57".
\item page 230 A different Hille book is refered to in l.8.
\item page 231 "for to C=-12" in the caption to Fig. 6.4 should be deleted. First line after figure, the notation has been better explained. See
\item page 239 l.3 add "in [21]" at the end of the line.
\item page 240 A paragraph was added before Condition 7.23, to explain the notation. See
\item page 242 Paragraph in middle of the page: the four authors should be replaced by the second one, "B.L.J. Braaksma".
\end{itemize}