Special Functions. An Introduction to the Classical Functions of Mathematical Physics

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Errata and Comments

1. Page ix, section number 11.4.2 should read: "Asymptotic Expansion; μ Fixed, ξ Large, 302"
2. Page ix, section number 11.4.3 should read: "Asymptotic Expansion; ξ Large, μ Arbitrary, 303"
3. Page 4, Equation (1.11): include $n > 0$.
4. Page 5, Line 4 and 5: For a proof that the tangent numbers are integers, observe that $y(z) = \tan z$ satisfies the differential equation $y' = 1 + y^2$; hence all derivatives of y at $z = 0$ are integers.
5. Page 16, Line -3: replace $=$ by $= -$.
6. Page 17, Theorem 1.4: include $(-1)^{k-1}$ in the expression for R_k.
7. Page 18, Line 4: include (x) in the kth derivative of f.
8. Page 26, Exercise 1.11, first line: delete $=$.
9. Page 38, Line 9: "Chapter 10" should read "Chapter 9".
10. Page 43, Section 3.2, Line 6-9: ... is analytic in the half-plane $\Re z > -1$ with 0 excluded. The question about the nature of the singularity at 0 is answered as follows: from $\Gamma(z) = \Gamma(z+1)/z$ and $\Gamma(1) = 1$ we see that the origin is a pole of first order.
11. Page 45, Section 3.2.3, Line 7: read $\frac{1}{2}\Gamma(p)$.
12. Page 49, Line 2 from the bottom: $/q$ should read $/\pi$.
13. Page 49, Bottom line: in the first fraction, the numerator should read π and not q.
14. Page 50, Line 2: replace "term" by "factor"

15. Page 52, Lines 8 and 9: The product sign must be moved to the numerator of the subsequent fraction (both in Line 8 and Line 9)
16. Page 52, Line -1: in the numerator of the middle part replace $(mn/e)^m n$ by $(mn/e)^{mn}$.
17. Page 71, Line -8: the summation should start with $n = 1$.
18. Page 74, 3.9: replace $e^{-\pi|y|}$ by $e^{-\pi|y|/2}$.
19. Page 74, Bottom line: in the first fraction, the denominator should read π and not q.
20. Page 76, Line -3: replace "for a start" by "for convergence".
21. Page 77, Line 5: replace $\Re z > 1$ by $0 < \Re z < 1$.
22. Page 80, Line 12: $u(u, y, z, t)$ should read $u(x, y, z, t)$.
23. Page 98, Bottom line: insert "=" after the sum.
24. Page 103, Equation(4.41) and in the second line below this equation: replace τ by t.
25. Page 131, Exercise 5.11: read $n = 0, 1, 2, \ldots$.
26. Page 142, Line 4: read A and B do not...".
27. Page 151, include the factor $2\pi i$ in the denominator in front of the integral.
28. Page 152, Equation (6.39), denominator of the third line: Replace 2^k by 2^n.
29. Page 159, Line 2: replace "It is easily verified that" by "Introducing in (6.55) the new variable of integration $u = 1 - e^{-t}$, we easily verify that"
30. Page 170, Exercise 6.18, the subscript in the Laguerre polynomial in the sum should read k and not n .
31. Page 171, Bottom, replace the $\sim$ by "=" (two times) and include $+o(1)$ after the sine and cosine terms.
32. Page 173, Line before (7.7): *Rec* should read $\Re c$.
33. Page 180, Line 2 after (7.23): include $\frac{2}{\sqrt{\pi}}$ in front of the $M-$function and $\frac{1}{\sqrt{\pi}}$ in front of the $U-$function.
34. Page 181, Line 2, 3 and 4 (formula for $Ei(z)$) should be skipped.
35. Page 181, Second line below this: (7.24) should read (7.25).
36. Page 182, Middle of the page: the number 1.089490... should read 1.1789... (twice).
37. Page 186, In subsection 7.3.8, Line 4: replace $\exp(iz)$ by $\exp(-iz)$.
38. Page 186, Middle, point 7.1: "Buchholtz" should read "Buchholz"; the same correction is needed in the Index on page 366.
39. Page 190, Line 4: z^s should be z^{-s}.
40. Page 201, Equation (8.33): lower limit of integration should read -1.
41. Page 222, Equation (9.6), second formula: replace the fraction $\frac{1}{2\pi i}$ by $\frac{-1}{2\pi}$.
42. Page 232, Line 8 from bottom: "Batemann" should read "Bateman".
43. Page 236, Equation (9.44): $(2/z)^\nu$ should read $(2z)^\nu$. The result holds for $\Re z > 0$ and $\Re\nu > -1/2$.
44. Page 236, Line after (9.44): "(6.12)" should read "(7.12)".
45. Page 247, Line 2 from bottom: "(3.13) and (3.14)" should read "(4.13) and (4.14)".

46. Page 253, Line 6 from bottom: "Remark 9.2" should read "Remark 9.4".
47. Page 255, Lines 7 and 8: replace the $\sim$ by "=" (two times) and write $[\cos(\zeta - \pi/4) + o(1)]$ and $[\sin(\zeta - \pi/4) + o(1)]$ for the cosine and sine terms.
48. Page 260, Line 6 from bottom: F_ϕ should read (rF_ϕ).
49. Page 273, Exercise 10.3. Replace the words "current density" by "charge density" (two times).
50. Page 279, Line 4 after (11.9). Replace $|a/z|$ by $|z/a|$.
51. Page 283, $t-$integral: include $0 < c < \lambda$.
52. Page 284, Line before (11.21): "non-negative" should read "non-positive".
53. Page 285, Line -5: write $u(t) = -i(t-1)$.
54. Page 289, Line before §11.3.1: "§11.3.6." should read "§11.3.4".
55. Page 298, Equation (11.60). Replace π by 2π (two times).
56. Page 299, Equation (11.64). Replace e^{-x} by e^{-x-y}.
57. Page 301, Line before Equation (11.71). Replace $s = 1$ by $t = 1$.
58. Page 304, Equation (11.81). Replace sinh, by $\sinh\gamma$,.
59. Page 315, Equation (12.1): $0 \leq k < 1$.
60. Page 315, Equation (12.2): $0 \leq k \leq 1$.
61. Page 321, Equations (12.15), (12.16), (12.17): ϕ should be restricted to the interval $[-\pi/2, \pi/2]$ and k as in (12.1) and (12.2). After (12.20) insert: "If $n > 0$ and $x^2 n > 1$ the integral in (12.20) should be interpreted as a Cauchy principal value integral."
62. Page 325, Line -5, series for θ_4: the exponential function should read e^{2niz} .
63. Page 346, Eq. (13.13): replace $\frac{1}{2}$ by $\frac{1}{s}$.
64. Page 353. Include item: G. Gasper and M. Rahman (1990), *Basic hypergeometric series*, Cambridge University Press, London and New York.
65. Page 353. Include item: W. Gautschi (1994), Algorithm 726: ORTHPOL - A package of routines for generating orthogonal polynomials and Gaus-type quadrature rules, *ACM Trans. Math. Softw.*, **20**, 21 – 62.