Errata and Comments to *Higher Transcendental Functions* and *Tables of Integral Transforms*

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**Higher transcendental functions, Vol. 1**

2.5(16): An equivalent summation formula can be found in the paper M. Lerch, *Einiges über den Integrallogarithmus*, Monatsh. Math. Phys. 16 (1905), 125–134, see there formula (3) on p.129; however with a different proof than given here (I thank Michael Schlosser for this reference). Another equivalent form of the formula is:

\[
\sum_{k=0}^{n} \binom{a}{k} \binom{c}{k} = \frac{3}{\binom{c}{c-a-1}} \frac{1}{\binom{c}{c-a-1}} \binom{1-rac{(a)_{n+1}}{(c-1)n+1}}{1-c-1}.
\]

This is an indefinite sum which can also be found by Gosper’s algorithm.

2.8(54): On the left replace \(3a + 5/6\) (the third argument of \(F\)) by \(2a + 5/6\). See the correct formula in [http://dlmf.nist.gov/15.4#iii](http://dlmf.nist.gov/15.4#iii), formula (15.4.32). For the proof and an observation of the error in *Higher Transcendental Functions* click there on the information on the right of the subsection header.

2.10 (1)–(4): The side condition for 2.10(1) and 2.10(4) should be:

\[|\arg z| < \pi, \quad |\arg(1 - z)| < \pi.\]

The side condition for 2.10(2) and 2.10(3) should be \(|\arg(-z)| < \pi\).

2.11(29): Read \(z^2(2-z)^{-2}\) instead of \(z^2/(2-z)^{−2}\) (already in errata list in the volume).

2.12(6): The side condition on the parameters should be \(\Re c > \Re b > 0\).

3.2(36), Remarks: Instead of 2.11(17) better use 2.11(29) (after correction of that formula).

3.4(8): On the right, after the equality sign, replace \(i\pi\) by \(-i\pi\) (observed by E. Diekema; see Ch. IV, (99) in L. Robin, *Fonctions sphériques de Legendre et fonctions sphéroidales, Tome II*, Gauthier-Villars, 1958).
after 3.5(3): For the convergence of both series require additionally that \( \Re \mu < \frac{1}{2} \).

3.15(4): This formula is valid for \( z \in \mathbb{C} \setminus (-\infty, 1] \). For \( z \in (-1, 1) \) the formula remains valid if we replace \( (z^2 - 1)^{\frac{1}{2} - \nu} \) by \( (1 - z^2)^{\frac{1}{2} - \nu} \) and \( P_{\frac{1}{n+\nu-\frac{1}{2}}}^{\frac{1}{2} - \nu} \) by \( P_{\frac{1}{n+\nu-\frac{1}{2}}}^{\frac{1}{2} - \nu} \):

\[
C_n^\nu(x) = 2^{\nu - \frac{1}{2}} \frac{\Gamma(n + 2\nu) \Gamma(\nu + \frac{1}{2})}{\Gamma(2\nu) \Gamma(n + 1)} (1 - x^2)^{\frac{1}{2} - \nu} P_{\frac{1}{n+\nu-\frac{1}{2}}}^{\frac{1}{2} - \nu} (x) \quad (x \in (-1, 1)).
\]

5.8(3): In the integrand the exponent of \( (1 - u - v) \) should be \( \gamma - \beta - \beta' - 1 \). Although the formula is given correctly in http://dlmf.nist.gov/16.15.E3, DLMF curiously refers there to Erdélyi et al. (1953a, §5.8) without observing the error in 5.8(3).

5.11(10): On the right the factor \( (1 - y)^{-\mu} \) should be replaced by \( (-y)^{-\mu} \).

6.15(15): The first factor \( \Gamma(-a) \) in the integrand should be \( \Gamma(a) \).

Higher transcendental functions, Vol. 2

10.9(6): The limit should be for \( \lambda \to 0 \) insted of \( \lambda \to \infty \), and the equalities hold for \( n = 1, 2, \ldots \).

Two lines below this formula sec. 10.10 should be sec. 10.11.

10.9(8): In the formula for \( K_n \) insert a factor \( n! \) on the right.

10.10(5): In the formula for \( C_n \) delete the minus sign on the right.

10.11(16): But for \( n = 0 \) and \( z_m = T_m \) we have \( z_1(x) = xz_0(x) \).

10.12(2): The formula for \( r_n \) should read: \( r_n = -n(n + \alpha) \).

§12.9, p.287, last formula: The last term on the left-hand side should be preceded by a plus sign rather than a minus sign.

12.9(9), (10): In these two formulas the last term on the left-hand side should be preceded by a plus sign rather than a minus sign.

Tables of integral transforms, Vol. 1

1.10(5): On the left replace the expression for \( f(x) \) \((0 < x < 1)\) by

\[
(1 - x)^{\nu}(1 + x)^{\mu} P_{2n+1}^{(\nu,\mu)}(x) + (1 + x)^{\nu}(1 - x)^{\mu} P_{2n+1}^{(\mu,\nu)}(x).
\]

1.10(6): On the left replace the expression for \( f(x) \) \((0 < x < 1)\) by

\[
(1 - x)^{\nu}(1 + x)^{\mu} P_{2n+1}^{(\nu,\mu)}(x) - (1 + x)^{\nu}(1 - x)^{\mu} P_{2n+1}^{(\mu,\nu)}(x).
\]

On the right replace \((-1)^{n+1}\) by \((-1)^{n}\).

2.10(6): On the left replace the expression for \( f(x) \) \((0 < x < 1)\) by

\[
(1 - x)^{\nu}(1 + x)^{\mu} P_{2n}^{(\nu,\mu)}(x) - (1 + x)^{\nu}(1 - x)^{\mu} P_{2n}^{(\mu,\nu)}(x).
\]
2.10(7): On the left replace the expression for $f(x)$ ($0 < x < 1$) by

$$(1 - x)^
u(1 + x)^\mu P_{2n+1}^{(\nu,\mu)}(x) + (1 + x)^
u(1 - x)^\mu P_{2n+1}^{(\mu,\nu)}(x).$$

On the right replace $(-1)^{n+1}$ by $(-1)^n$.

3.3(4): On the left replace $P_n^{(\nu,\nu)}$ by $P_n^{(\nu,\mu)}$.

This formula implies 1.10(5), 1.10(6), 2.10(6) and 2.10(7).

Tables of integral transforms, Vol. 2

20.2(6): On the right replace $(1 - z)^\sigma$ by $(1 - z)^{-\sigma}$.

This formula is correctly reproduced in Gradshteyn & Ryzhik, sixth ed., (7.512.9).