

Corrigendum to “On the coefficients of Neumann series of Bessel functions”: [J. Math. Anal. Appl. 380 (2011), No. 2, 628-631]

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We have corrected certain inaccuracies in the above paper. The inaccuracy occurs in Eq. (2.1) in the formulation of the Theorem, where it was incorrectly stated that the formula for the coefficients of Neumann series of Bessel functions is

$$\alpha(\omega) = \begin{cases} \frac{\Gamma(\nu + k + 1/2)h(k+)}{\mathcal{B}(k)}, & \omega = k \in \mathbb{N}, \\ \frac{\Gamma(\nu + \omega + 1/2)}{\{\omega\}} \left(\frac{h(\omega)}{\mathcal{B}(\omega)} - \frac{h(k+)}{\mathcal{B}(k)} \right), & 1 < \omega \neq k \in \mathbb{N}, \end{cases}$$

where

$$\mathcal{B}(\omega) := \frac{\partial}{\partial \omega} \left(\Gamma(\nu + \omega + 1/2) J_{\nu+\omega}(x) \right).$$

The correct expression should read

$$\alpha(\omega) = \begin{cases} \Gamma(\nu + k + 1/2) \left. \frac{d}{d\omega} \frac{h(\omega)}{\mathcal{B}(\omega)} \right|_{\omega=k+}, & \omega = k \in \mathbb{N}, \\ \frac{\Gamma(\nu + \omega + 1/2)}{\{\omega\}} \left(\frac{h(\omega)}{\mathcal{B}(\omega)} - \frac{h(k+)}{\mathcal{B}(k)} \right), & 1 < \omega \neq k \in \mathbb{N}. \end{cases} \quad (2.1)$$

The three subsequent illustrative examples have to be corrected according to the above formula, as well. The claims of Example 1 and Example 3 associated with the case $\omega = k \in \mathbb{N}$ should read, respectively, as

$$\alpha(\omega) = \begin{cases} \Gamma(\nu + k + 1/2) \left. \frac{d}{d\omega} \frac{e^{-\omega}}{\mathcal{B}(\omega)} \right|_{\omega=k+}, \\ \Gamma(\nu + k + 1/2) \left. \frac{d}{d\omega} \frac{e^{-s\omega} J_0(\omega)}{\mathcal{B}(\omega)} \right|_{\omega=k+}. \end{cases}$$

Finally, the correct assertion of Example 2 reads as follows:

$$\alpha(\omega) = \begin{cases} \Gamma(\nu + k + 1/2) \left. \frac{d}{d\omega} \frac{\omega^{\beta-1}}{(e^\omega - 1)\mathcal{B}(\omega)} \right|_{\omega=k+}, \\ \frac{\Gamma(\nu + \omega + 1/2)}{\{\omega\}} \left(\frac{\omega^{\beta-1}}{\mathcal{B}(\omega)(e^\omega - 1)} - \frac{k^{\beta-1}}{\mathcal{B}(k)(e^k - 1)} \right), & \omega \in [1, \infty) \setminus \mathbb{N}. \end{cases}$$

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