Values of the polygamma functions at rational arguments

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Corrigendum

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The authors regret that there are errors in some of the equations in the final section of their paper. They would like to express their gratitude to Dr K S Kölbig for bringing the errors to their attention.

The sentence on page 15026 beginning with 'We also need the relations ...' has to be replaced with:

We also need the relations

$$\psi^{(n)}\left(\frac{1}{3}\right)+\psi^{(n)}\left(\frac{2}{3}\right)=(3^{n+1}-1)\psi^{(n)}(1) \qquad (n\in\mathbb{N})$$

and

$$\psi^{(n)}\left(\frac{1}{4}\right)+\psi^{(n)}\left(\frac{3}{4}\right)=2^{n+1}\psi^{(n)}\left(\frac{1}{2}\right) \qquad (n\in\mathbb{N}),$$

which are easily obtained by recalling the multiplication formula for $\psi^{(n)}(z)$:

$$\psi^{(n)}(mz)=\frac{1}{m^{n+1}}\sum_{j=1}^{m}\psi^{(n)}\left(z+\frac{j-1}{m}\right) \qquad (n,m\in\mathbb{N}).$$

Further, equations (3.2) and (3.3) on page 15027 should read as follows:

$$\left.\begin{matrix}\psi^{(2n)}\left(\frac{1}{3}\right)\\ \psi^{(2n)}\left(\frac{2}{3}\right)\end{matrix}\right\}=\pm(-1)^n\sqrt{3}\,3^{2n}\,\frac{(2\pi)^{2n+1}}{2\,(2n+1)}\,B_{2n+1}\left(\frac{1}{3}\right)$$
$$+\frac{1}{2}\,(2n)!(1-3^{2n+1})\,\zeta(2n+1) \qquad (n\in\mathbb{N}) \tag{3.2}$$

and

$$\left.\begin{matrix}\psi^{(2n)}\left(\frac{1}{4}\right)\\ \psi^{(2n)}\left(\frac{3}{4}\right)\end{matrix}\right\}=\pm(-1)^n\,4^{2n}\,\frac{(2\pi)^{2n+1}}{2n+1}\,B_{2n+1}\left(\frac{1}{4}\right)$$
$$+(2n)!(1-2^{2n+1})\,2^{2n}\,\zeta(2n+1) \qquad (n\in\mathbb{N}). \tag{3.3}$$

