LETTER TO THE EDITOR: THE HISTORY OF A SERIES RELATED TO THE POISSON DISTRIBUTION

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In [2] the sequence $a_n = e^{-n} \sum_{i=0}^{n} \frac{n^i}{i!}$ is studied. Later, it was pointed out [3] that this quantity is related to the Poisson distribution.

However this sequence has an extremely rich and interesting history, for which we refer to [1].

It is related to Ramanujan's famous conjecture that

$$\frac{1}{2}e^n = 1 + \frac{n}{1!} + \frac{n^2}{2!} + \cdots + \frac{n^n}{n!}\theta, \qquad \textit{where } \theta \textit{ lies between } \tfrac{1}{2} \textit{ and } \tfrac{1}{3},$$

which was eventually proved in [1].

References

[1] P. Flajolet, P. Grabner, P. Kirschenhofer, and H. Prodinger. On Ramanujan's $Q(n)$–function. *Journal of Computational and Applied Mathematics*, 58:103–116, 1995.

[2] Z. László and Z. Vörös. On the limit of a sequence. *Acta Math. Acad. Paedagog. Nyházi. (N.S.)*, 15:35–40 (electronic), 1999.

[3] N. Surulescu. On some sequences derived from the Poisson distribution. *Acta Math. Acad. Paedagog. Nyházi. (N.S.)*, 18:7–12 (electronic), 2002.

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