1067-Z1-2052 **Jonathan A Cox*** (`coxja@member.ams.org`), Department of Mathematical Sciences, SUNY Fredonia, Fredonia, NY 14063. *Grand finale: The Basel Problem as a culminating objective in Calculus II.* Preliminary report.

The Basel Problem—finding the exact sum of the series $\sum_{k=1}^{\infty} \frac{1}{n^2}$—baffled mathematicians for decades until Euler solved it in 1735. He later gave an alternate proof consisting of several steps, "each of which falls well within the scope of a modern calculus course" according to Dunham. Indeed, every step in the proof utilizes standard techniques from Calculus II. Furthermore, the proof broadly draws from diverse portions of the course, including integration by parts, improper integrals, and integration of power series, so that it serves as an elegant example of how these different concepts can be brought together and used in harmony.

Calculus II students in my classes complete steps of the proof as "puzzle pieces" during the semester and then, as the final activity of the course, put the pieces together to obtain Euler's sum.

The approach of assigning puzzle pieces building through the semester toward an ultimate course goal is transportable to other courses. At its best, in engenders in students feelings of curiosity and mystery, as well as a sense that the course material has a definite direction and larger purpose. (Received September 22, 2010)

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