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Student-led precursors to formal proofs.

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A personal narrative is presented which explores the author's experience of teaching a mathematics master-class for year 10 students. From the introduction: In this article we look at just one of the problems tackled by the students that day, and highlight the variety of informal proofs that it led to. In relating this interesting experience of mathematics teaching and learning, the author hopes that readers might be encouraged to use some of these ideas with their own classes. The problem was as follows: If n is an integer, then what can you say about $\frac{n^3}{6} + \frac{3n^2}{2} + \frac{13n}{3} + 4$?

Classification: E50 F30 F60

Keywords: proving; justifying; mathematical explorations; discovery learning; open-ended problems; number theory; divisibility; integers; manipulation of expressions; factorization; polynomials; modular arithmetic methods; proofs