Allendoerfer Awards, in particular, for their generous recognition.

As mathematicians one of our great pleasures is working in collaboration to solve a challenging problem. Sharing our results and, whenever possible, explaining how they were discovered is an equal joy. Writing "Permutations and Combination Locks" gave me the opportunity to enjoy each of these pleasures. In addition, Dan Velleman and I tried to provide our students with an accessible model of mathematical research which we hope will encourage them to undertake their own investigations. I look forward to those investigations and the opportunity to share them with my colleagues in the MAA.

Letters to the Editor

Dear Editor:

I thank Josh Nichols-Barrer (Letters to the Editor, June 1996, p. 238) for bringing to light an error in my article *Continued powers and a sufficient condition for their convergence* (this MAGAZINE, December 1995, pp. 387–392). He points out that since it does not in fact violate my convergence condition for continued squares, my Example III doesn't show that the condition for general powers $p > 1$ is not necessary.

As my penance for publicly transgressing first-year calculus, I offer the following replacement for the lightly-conceived and ill-fated Example III. Consider the continued square

$$S = b+{}^2(0+{}^2(b+{}^2(0+{}^2(b+{}^2(0+{}^2(\ldots))))))$$

with $b = 3/(4^{4/3})$. This fails the convergence test for a continued square. With $p = 2$, we have $R = (p-1)/p^{p/(p-1)} = 1/4$, $x_n = b$ for n even and 0 for n odd, and

$$\left(\frac{x_n}{R}\right)^{p^n} = \begin{cases} [3/(4^{1/3})]^{2^n} & n \text{ even;} \\ 0 & n \text{ odd.} \end{cases}$$

The dominant subsequence of even terms results in an unbounded expression, and the test fails.

However, S is equivalent to the continued fourth power

$$b + {}^4(b + {}^4(b + {}^4(\ldots))),$$

which converges by the boundedness test: with $p = 4$, one has $R = 3/(4^{4/3})$ and $(x_n/R)^{p^n} = 1^{4^n} = 1$. The continued square S therefore converges, but since it fails the continued squares convergence test, the test remains sufficient but not necessary.

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