Subject: bitten by Romberg integration
Posted by Mark Fardal on Thu, 03 Oct 1996 07:00:00 GMT
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Hi,

I've been doing an integration with the IDL routine QROMO, which is an open Romberg algorithm based on the Numerical Recipes routine of the same name. I called it with eps=1.e-7 to ensure smooth behavior. However, as I gradually changed the parameters affecting the integrand, I found the result jumped abruptly by a factor of 1.002. In other words, the routine underestimated the error by a factor of 2e4.

I've always liked Romberg integration just because it is often so fast. But I've found similar problems on occasion with the Numerical Recipes Fortran routine. The problem seemed to be that the routine will occasionally get a lucky guess as to the answer, and return prematurely. In the IDL routine I tried setting K=8 instead of K=5 and so far have not have a problem (haven't tested much yet though!) I've also tried to fix this in the past by requiring two successive good guesses. But does anyone have another suggestion?

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