Re: REPOST: Re: Flies in the ointment.

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From: r.e.s. (*r.s_at_ZZmindspring.com*)
Date: 03/18/05

Date: Fri, 18 Mar 2005 00:52:55 GMT

"Tim Peters" <tim.one@comcast.net> wrote ...
> [Randy Poe]
>>> I notice that somebody has made a
>>> comment that it's Newton's method. Think I'll take a
>>> stab at editing and retitling the article tonight
>>> and see what happens.
>
> [r.e.s.]
>> Please see also my comment that it is a simple fixed−point iteration
>> obtainable without Newton's method.
>
> Don't you think that's a stretch, though?

Not a stretch, really, and I do think it's worth noting that this
algorithm has a simple derivation that does not require differentiation.
(It's not that the differentiation is difficult.)

> I do, for two reasons:
> 1. General. A zero r of a function f(x) is always a fixed point of a
> Newton−method iteration (well, assuming f'(r) is defined). Deriving
> the same formula from a fixed−point perspective may be an exercise
> in cleverness, but if you can get the same thing directly from
> applying Newton's method, the latter is preferable because entirely
> straightforward.

Of course Newton's method *is* a fixed−point iteration, but the
point is that it's as straightforward to derive the algorithm −−
as posted at the wikipedia site −− in three lines of algebra as it
is to manipulate the equation from Newton's method. Both require
about the same not−so−clever manipulations.

> 2. Specific. You can find the n'th−root Newton method all over the
> web, in its weighted−average and "raw" forms. Heck, it's frequently
> given as a programming assignment in intro numerical analysis
> courses. In these contexts, it's always presented as an application
> of Newton−Raphson (proof: I looked at a lot of course handouts
> Google could find <wink>).

True, but it's nice also to bring in the connection to fixed−point
iterations (and also a fixed−point th