Subject: Re: value of a function at y(0) given the definite integral
Posted by John-David T. Smith on Fri, 26 Oct 2001 20:28:24 GMT
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aqueous wrote:
>
> Say I know the shape of a function y(x). Say it's x^2.
> Say I know the integral from a to b of this function. Say it's 1.0.
>
> What I want to do is find out the value of the function at y(0) given
> the info above, mainly
>
> y(x) = x^2
> integral_ab(y(x)) = 1.0
> What's the value of y(lowerLimit)?

> Does this make sense??

No, I suppose not. If you have the function in hand, then:

y(x=0)=y(0)=0^2=0

Presumably this result was obvious to you too, and you mean you have an integral over some limits and want to use this information to find the value at x=0, without knowing the function itself? This is of course impossible.

Perhaps what you *really* mean is you have some function like:

y=Ax^2

where you want to determine an overall normalization constant "A" from a known integral over a fixed range of the given functional form. This is a much more sensible problem, and quite common in practice. It can be approached numerically (for which IDL can offer some help), or analytically (for which IDL is useless). In both cases, the simple relation:

integral(Ay(x) dx)=A integral(y(x) dx)

will guide the way.

JD