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Subject: solving equation consisting of points - sort of...  
Posted by [shokland](#) on Thu, 06 Nov 2008 14:49:17 GMT  
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I have a parametric curve, where I wish to calculate the parameter value,  $t$ , at fixed positions along the trace,  $g$ . I calculate the arclength  $a_i$  for a set of parameter values  $t_i$ , and now wish to somehow solve the equations:  $t_j = a_j$  with  $t_j$  as the unknown. Does anyone have a suggestion for performing this in an elegant (and mathematically sound) manner? Obviously, given,  $a_k$ , one could find  $l$ , such that  $a(t_l) < a_k$  and  $a(t_{l+1}) > a_k$  and perform a linear interpolation to find  $t_k$ , but as said, I'm wondering if there's a better way...

Thanks in advance for any help you can offer.

Kind regards,  
Steffen

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Subject: Re: solving equation consisting of points - sort of...  
Posted by [pgrigis](#) on Thu, 06 Nov 2008 20:19:41 GMT  
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So you are trying to solve  $\int_0^t f(x) dx = A$  for  $t$  given  $A$  and  $f$ ?

I would probably just use the simpler method with interpolate unless highly accuracy was absolutely needed...

Ciao,  
Paolo

shokland wrote:

- > The curve is given by a function. However the arc length is not given
  - > as a closed function but rather as an integral, and what I would like
  - > to obtain is the parameter value corresponding to a particular arc
  - > length.
  - >
  - > Best regards,
  - > Steffen
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Subject: Re: solving equation consisting of points - sort of...  
Posted by [shokland](#) on Fri, 07 Nov 2008 09:50:01 GMT  
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> So you are trying to solve  $\int_0^t f(x)dx=A$  for  $t$  given  $A$  and  $f$ ?  
Exactly! wasn't sure if LaTeX-style notation would be acceptable, but certainly makes communication of problems easier...

> I would probably just use the simpler method with interpolate  
OK - was that the (rather unsatisfying) solution that I originally proposed?

Thanks,  
Steffen

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Subject: Re: solving equation consisting of points - sort of...  
Posted by [pgrigis](#) on Fri, 07 Nov 2008 14:56:29 GMT  
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shokland wrote:

>> So you are trying to solve  $\int_0^t f(x)dx=A$  for  $t$  given  $A$  and  $f$ ?  
> Exactly! wasn't sure if LaTeX-style notation would be acceptable, but  
> certainly makes communication of problems easier...  
>  
>> I would probably just use the simpler method with interpolate  
> OK - was that the (rather unsatisfying) solution that I originally  
> proposed?

Yes, that would be computing the integral for different values  
[ $t_1, t_2, \dots$ ] and interpolate [ $A_1, A_2, \dots$ ] at your desired  $t$ .

If your function is smooth, that should work pretty well...  
If the function is not smooth, you may want to be careful....

Ciao,  
Paolo

>  
> Thanks,  
> Steffen

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