Subject: Re: Integration qpint
Posted by Craig Markwardt on Mon, 13 Aug 2012 09:00:07 GMT
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On Sunday, August 12, 2012 1:42:57 PM UTC-4, Gompie wrote:
> Hi
>
> Can anyone help. I am using qpint1d to integrate but i get
>
> "Program caused arithmetic error: Floating overflow:"
>
>
>
> The code is
>
> C1 = 1.1910427E-12
>
> c2=1.43883
>
> T=300
>
> c=c1*(c2^(-4))*T^4
>
> llimit=c2*2380/T
>
> ulimit=c2*2940/T
>
> print,"X=",llimit,ulimit
>
> lin= c*qpint1d('x^3/(EXP(X)-1)', llimit, +inf, /expr)
>
> rin=c*qpint1d('x^3/(EXP(X)-1)', ulimit, +inf, /expr)
>
> print,abs(lin-rin)
>
> end
>
>
>
> This outputs a number (i am not sure if it is correct) but it also says floating point error.

Check the status variable. It's not an error. You can verify this yourself by

IDL reports *any* overflow or underflow that occurs. That's not necessarily bad.

What do you think happens when you try to evaluate EXP(+inf)? Or EXP(+3000)? Your user function generates an overflow, that's what happens. IDL is warning you that it is treating EXP(+3000) equivalent to +infinity. That is what happens when IDL cannot evaluate the full range

of your user function with full precision. EXP(+3000) simply cannot be represented on a modern computer.

If you don't want overflow errors, then rewrite your expression to use EXP(-X) instead. Of course, then you will get underflow errors. Life sucks, doesn't it? :-)

If you really don't want overflow errors for this function, then you must avoid using +inf as your upper bound.

Craig Markwardt
