

Re: approximation by series expansion

Source: <http://sci.tech-archive.net/Archive/sci.math/2007-08/msg02910.html>

- *From:* rembremading <rembremading@xxxxxxx>
 - *Date:* Sat, 18 Aug 2007 16:09:21 +0200
-

Robert Israel wrote:

$$\frac{2(-1+a)^{1/2}/a^{1/2}((2*a-1)*((-1+a)*a)^{1/2}+2*a^2-2*a)^j}{((-8*a+1+8*a^2)*((-1+a)*a)^{1/2}+8*a^3+4*a-12*a^2)^{-j}}$$

Yes, my fault again. Actually I tried the integral in Maple 10, but
 $c_j := 1/\text{Pi} * \int(2/(2*a - 1 - \cos(t)) * \cos(j*t), t = -\text{Pi}.. \text{Pi});$
did not evaluate immediately. (What did You do to make it evaluate?
Substitute the cosine?)

But I can see, that it is possible in this case.

However, in the general case, my functions will be more complicated than
 $1/(a-x)$ (but similar in principle) and the analytic evaluation of the
integral will in general not be possible anymore.

We will see.

In the mean time I am pondering about the relation between Fourier transform
and Chebyshev expansion.

Because, what I want to do with the result of the approximation is something
like a Fourier transform in three dimensions. So the question raises,
whether the approximation will be as good as it looks like after the
transform. Maybe another expansion will give better results although the
approximation to a given order looks worse...

.