Re: How do I compute e^e to thounands of decimal places?

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- *Date*: 17 Dec 2006 19:50:58 −0800

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john wrote:

> I know that I can compute e quickly by using the Taylor series with the
> binary splitting.
> I there any fast algorithm for computing e^e to high precision?
> Thanks

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Hmm ! Nice...

[1] Construct the sequences (A_n) ,(B_n) in following manner

A_{n+1}=(4n+2)*A_{n} + A_{n−1} , n in {1,2,...}, A_0:=1, A_1:=1.

B_{n+1}=(4n+2)*B_{n} + B_{n−1} , n in {1,2,...}, B_0:=0, B_1:=1.

Suppose

C_n:=(A_n +B_n)/(A_n−B_n)

and define C:= C_{1000} .

[2] If the sequences (X_n) ,(Y_n) are generated by

X_{n+1}=(4n+2)*X_{n} +(C^2)* X_{n−1} , n in {1,2,...}, X_0:=1, X_1:=1.

Y_{n+1}=(4n+2)*Y_{n} + (C^2)*B_{n−1} , n in {1,2,...}, Y_0:=0, Y_1:=1.

[C being given at step [1]] then

e^e =approx= Z_n:=(A_n +C*B_n)/(A_n−C*B_n)

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