Re: MeijerG

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- *From*: dimitris <dimmechan@xxxxxxxxx>
- *Date*: 27 Apr 2007 09:02:02 −0700

A collegue of mine came across this function during the course of the
inversion of one Fourier Transform.

He suceeded in writing this function it terms of the sum of two
products; each of these products
was consist of BesselK*StruveL. He didn't give me more details. He put
me as a chalenge if I could
use a CAS in order to arrive at his formula (he checked his formula
numerically). I didn't
manage to find anything also, that's why the presence of this thread!

As regards your statement about the analyticity of this function, with
all of my respect to your
knowledge, are you 100% sure?

I don't know how you came to this conclusion. Mathematica can't get
neither the limit as o−>0,
nor at infinity. But look the following plot (I know that plot can be
misleading sometimes, but I think here
is not the case)...

```
In[10]:=
f[o_, m_] := MeijerG[{{1}, {}}, {{−2^(−1), 1/2}, {0}}, o^2/(4*m^2)]

In[14]:=
(Limit[f[o, 1], o −> #1] & ) /@ {0, Infinity}

Out[14]=
{Limit[MeijerG[{{1}, {}}, {{−(1/2), 1/2}, {0}}, o^2/4], o −> 0],
Limit[MeijerG[{{1}, {}}, {{−(1/2), 1/2}, {0}}, o^2/4],
o −> Infinity]}

In[21]:=
Plot[{f[x, 1], −x^(−1) − 2*Pi}, {x, 0, 10}, Axes −> False, Frame −>
{True, True, False, False}]
```

I think that the function behaves as −1/x at zero and as −2*Pi.

Dimitris

Ÿ/— Bhuvanesh -³Á±Èµ:

> I don't think it can be written in closed form in terms of anything else that is currently implemented in Mathematica/Maple. It's an entire function, though. How did you come across it?
>
> Bhuvanesh,
> Wolfram Research

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