



```

> summation formula gives
>
> int(hypergeom([1/2,-3/2],[1],x)*exp(-x),x=0..infinity);
> infinity
> /
> |
> | hypergeom([-3/2, 1/2], [1], x) exp(-x) dx
> |
> /
> 0
> convert(%,StandardFunctions);
>
> infinity
> /
> |
> |
> |
> /
> 0
>
> /2 x \ 1/2 / 4 x \ 1/2 \
> ||---- - 2/3| EllipticK(x ) |- ---- + 8/3| EllipticE(x )|
> \ 3 \ 3 / /
> /-----+-----/
> \ Pi Pi /
>
> exp(-x) dx
>
> that numerically evaluates to the same number. Maple seems to be not able to
> convert that to Bessel functions expression.
>
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> http://math.tntech.edu/alec/
>
>

```

It's interesting to see two different ways of doing this as Borel summation. Since we need a series of the form  $z^*f(z)$ , and ours isn't, you did  $z^*F(z)$  and when you put in  $z=1$  we get  $F(1)$ , while I wrote it as  $F(z) = 1+z^*G(z)$  and did the transform on the part without the 1. Mine comes out as:

```

> 1-3/4*int(hypergeom([-1/2,3/2],[2],t)*exp(-t),t=0..infinity);
>
> 3 / [-1 3] \ \
> 1 - - int|hypergeom|[-, -], [2], t| exp(-t), t = 0 .. infinity|
> 4 \ [2 2] / /
>
> convert(%,StandardFunctions);

```

sci.math: Re: A day of a CAS super-hero

$$1 - \int_0^{\infty} \frac{3 \sqrt[4]{4t-1} \sqrt{1+t} \operatorname{EllipticK}\left(\frac{\sqrt{1/2}}{\sqrt{4t-1}}\right)}{4 \sqrt[3]{t} \pi} dt$$

$$+ \frac{(-4 + 8t) \operatorname{EllipticE}\left(\frac{\sqrt{1/2}}{\sqrt{4t-1}}\right)}{3 \sqrt[3]{t} \pi} \exp(-t), t = 0 \dots \infty$$

--

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