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[
> with(inttrans);
[addtable, fourier, fouriercos, fouriersin, hankel, hilbert, invfourier, invhilbert, invlaplace,
  invmellin, laplace, mellin, savetable]
> c:=1/sqrt(2):
> r[1]:=c*(1+I); r[2]:=c*(-1+I); r[3]:=c*(-1-I); r[4]:=c*(1-I);

$$r_1 := \left(\frac{1}{2} + \frac{1}{2}I\right)\sqrt{2}$$


$$r_2 := \left(\frac{-1}{2} + \frac{1}{2}I\right)\sqrt{2}$$


$$r_3 := \left(\frac{-1}{2} - \frac{1}{2}I\right)\sqrt{2}$$


$$r_4 := \left(\frac{1}{2} - \frac{1}{2}I\right)\sqrt{2}$$

> f:=1/mul((x-r[i]), i=1..4);

$$f := \frac{1}{\left(x - \left(\frac{1}{2} + \frac{1}{2}I\right)\sqrt{2}\right)\left(x + \left(\frac{1}{2} - \frac{1}{2}I\right)\sqrt{2}\right)\left(x + \left(\frac{1}{2} + \frac{1}{2}I\right)\sqrt{2}\right)\left(x - \left(\frac{1}{2} - \frac{1}{2}I\right)\sqrt{2}\right)}$$

> fourier(f,x,k);

$$\frac{1}{2}\sqrt{2}\pi \left( e^{\left(-\frac{k\sqrt{2}}{2}\right)} \left( \sin\left(\frac{k\sqrt{2}}{2}\right) + \cos\left(\frac{k\sqrt{2}}{2}\right) \right) \text{Heaviside}(k) \right. \\ \left. - e^{\left(\frac{k\sqrt{2}}{2}\right)} \left( \sin\left(\frac{k\sqrt{2}}{2}\right) - \cos\left(\frac{k\sqrt{2}}{2}\right) \right) \text{Heaviside}(-k) \right)$$

> g:=% assuming k>0;

$$g := \frac{1}{2}\sqrt{2}\pi e^{\left(-\frac{k\sqrt{2}}{2}\right)} \left( \sin\left(\frac{k\sqrt{2}}{2}\right) + \cos\left(\frac{k\sqrt{2}}{2}\right) \right)$$

>

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