Optionally, *accuracy* can be used to specify the desired fractional accuracy.

In complex expressions the error function is

$$erf(z) = \frac{2z}{\sqrt{\pi}}\,{}_1F_1\left(\frac{1}{2};\frac{3}{2};-z^2\right),$$

where

$${}_1F_1\left(\frac{1}{2};\frac{3}{2};-z^2\right)$$

is the confluent hypergeometric function of the first kind HyperG1F1. In this case the accuracy parameter is ignored.

Details

The *accuracy* parameter specifies the fractional accuracy that you desire. That is, if you set *accuracy* to 10^{-7}, that means that you wish that the absolute value of $(f_{actual} - f_{returned})/f_{actual}$ be less than 10^{-7}.

For backwards compatibility, in the absence of *accuracy* an alternate calculation method is used that achieves fractional accuracy better than about $2x10^{-7}$.

If *accuracy* is present, erf can achieve fractional accuracy better than $8x10^{-16}$ for *num* as small as 10^{-3}. For smaller *num* fractional accuracy is better than $5x10^{-15}$.

Higher accuracy takes somewhat longer to calculate. With *accuracy* set to 10^{-16} erfc takes about 50% more time than with *accuracy* set to 10^{-7}.

See Also

The **erfc**, **erfcw**, **dawson**, **inverseErf**, and **inverseErfc** functions.

erfc

erfc(*num* [, *accuracy*])

The erfc function returns the complementary error function of *num* (erfc(x) = 1 - erf(x)). Optionally, *accuracy* can be used to specify the desired fractional accuracy.

In complex expressions the complementary error function is

$$erfc(z) = 1 - erfc(z) = 1 - \frac{2z}{\sqrt{\pi}}\,{}_1F_1(\tfrac{1}{2},\tfrac{3}{2},-z^2) \text{ where } {}_1F_1(\tfrac{1}{2},\tfrac{3}{2},-z^2)$$

is the confluent hypergeometric function of the first kind HyperG1F1. In this case the accuracy parameter is ignored.

Details

The *accuracy* parameter specifies the fractional accuracy that you desire. That is, if you set *accuracy* to 10^{-7}, that means that you wish that the absolute value of $(f_{actual} - f_{returned})/f_{actual}$ be less than 10^{-7}.

For backwards compatibility, in the absence of *accuracy* an alternate calculation method is used that achieves fractional accuracy better than $2x10^{-7}$.

If *accuracy* is present, erfc can achieve fractional accuracy better than $2x10^{-16}$ for *num* up to 1. From *num* = 1 to 10 fractional accuracy is better than $2x10^{-15}$.

Higher accuracy takes somewhat longer to calculate. With *accuracy* set to 10^{-16} erfc takes about 50% more time than with *accuracy* set to 10^{-7}.

See Also

erf, **erfcw**, **erfcx**, **inverseErfc**, **dawson**

erfcw

erfcw(z)

The erfcw is a complex form of the error function defined by