Γ-function

from Wikipedia

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Abstract

In mathematics, the gamma function (represented by Γ, the capital letter gamma from the Greek alphabet) is one commonly used extension of the factorial function to complex numbers.

1 Introduction

The gamma function is defined for all complex numbers except the non-positive integers. For any positive integer n,

$$\Gamma(n) = (n-1)!\,. \tag{1}$$

Derived by Daniel Bernoulli, for complex numbers with a positive real part, the gamma function is defined via a convergent improper integral:

$$\Gamma(z) = \int_0^\infty x^{z-1} e^{-x}\,dx, \qquad \Re(z) > 0\,. \tag{2}$$

Here is a reference to equation (2).

The gamma-function is illustrated on Figure 1 using *gnuplot with* cairolatex terminal.

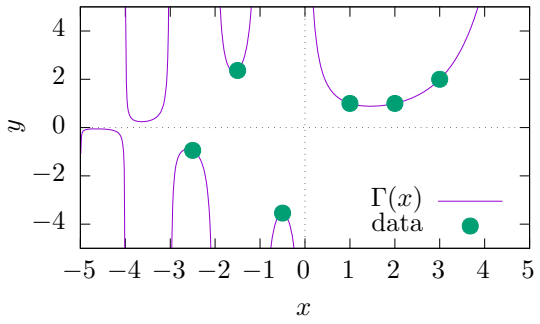

Figure 1: Illustration of the gamma-function with gnuplot and cairolatex terminal.

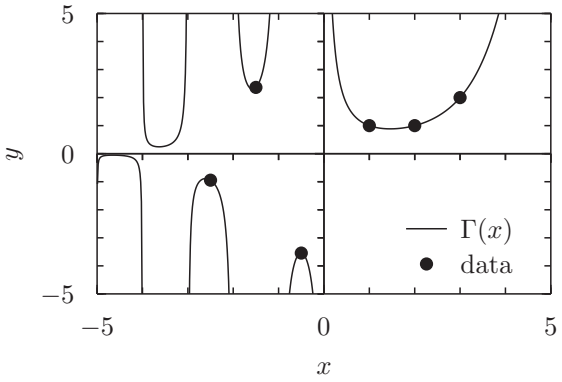

Figure 2: Illustration of the gamma-function with pyxplot pdf terminal.