F5- Gamma function

$$\Gamma(z) = \int_0^\infty x^{z-1} e^{-x}\, dx$$

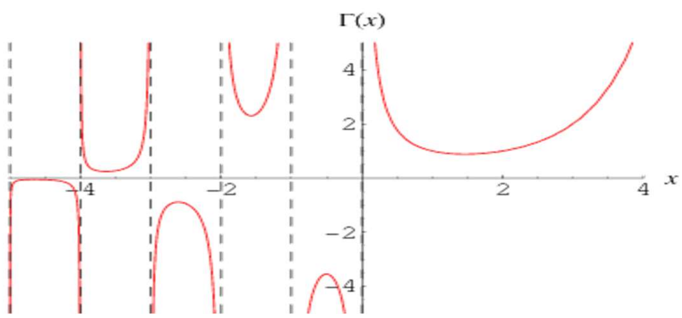
Gamma function can be understood as an extension of the factorial function to complex numbers. The gamma function is defined for all complex numbers except the non-positive integers, and for any positive integer.

Domain: z >0, or more precisely R(z) > 0 i.e. Real part of Z is positive

Co-domain: For specific domain, co-domain is $\mathbb{R}_{>0} = \{x \in \mathbb{R} \mid x > 0\}$

Properties (Most useful ones):

1. Gamma function is monotonic for 0<x<∞



2. Gamma function satisfies the recursive property for 0<x<∞

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

3. It is convex for positive real numbers.
4. The function does not have periodicity.

[References]

[1.] [Martin E. Muldoon, 1978] Some monotonicity **properties** and characterizations of the gamma function

[2.] Properties of Gamma function http://www.jekyll.math.byuh.edu/courses/m321/handouts/gammaproperties.pdf

[3.] Online resource, Wikipedia, https://en.wikipedia.org/wiki/Gamma_function