Problem 1: Gamma function, Γ (x)

Saraswati Saud
Student ID: 40115097

1 Introduction

1.1 Description

The gamma function represented by Γ(x), is an extension of the factorial function to complex numbers. It is defined for all the complex numbers except the non-positive integers.

Specifically, Γ(n) = (n-1)! where n > 0.

1.2 Domain

Any complex number that is not a negative integer is in the domain of the function.
So, the domain of the Gamma function is (0, +∞).

1.3 Co-domain

The co-domain is the set of all real numbers (-∞, +∞).

1.4 Characteristics of Gamma Function

1. The gamma function is uniquely defined for all positive integers and complex numbers with positive real parts.
2. For real values of argument 'n', the value of the gamma function Γ(n) are real (or infinity). The gamma function is not equal to zero.
3. Γ(n+1) = n!, for integer n > 0.
4. Γ(n+1) = n Γ(n) (function equation).

References

[1] MathWorld: Gamma Function
`https://mathworld.wolfram.com/GammaFunction.html`

[2] Geeksforgeeks
`https://www.geeksforgeeks.org/gamma-function`