



# CONTRIBUTION BY A GREAT MATHEMATICIAN: SRINIVASA RAMANUJAN

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**Abstract:** In this paper, we will discuss the journey of the great mathematician Srinivasa Ramanujan. We will mention his background including his family, education and early achievements. This paper will certainly contain his mathematical discoveries in different topics and formulas he worked on.



**Keywords:** Srinivasa Ramanujan, The World's Greatest Mathematician, modular functions

## INTRODUCTION

### About the Srinivasa Ramanujan:

Srinivasa Ramanujan, sometimes described as 'The World's Greatest Mathematician' was born into a poor Indian village, Erode, on the 22nd of December, 1887. He lived in Erode for only a year and then moved with his mother to Kumbakonam, the town where Kuppuswamy Srinivasa Aiyangar (Ramanujan's father) worked as a clerk in a cloth merchant's shop.

In this town, Ramanujan attended several primary schools where he achieved a distinction in his primary examination which placed him in Town High School in 1898. Interestingly enough, Ramanujan chose to create his own path into mathematics at only the age of 13, he focused on the sum of geometric and arithmetic series. In 1902, Ramanujan created a method for solving quartic equations and just two years later, he explored Euler's Constant and was able to calculate it to 15 decimal places as well as looking deeply into the series of  $S(1/n)$  and Bernoulli numbers.

In the same year, Ramanujan gained a scholarship due to his outstanding performance in his studies and therefore was a F.A student at Kumbakonam's Government College. Throughout the year he got more and more fascinated by the subject and his passion grew for mathematics. Hence, he failed all his formal education but mathematics at KGC. This failure had cost Ramanujan depression because neither he nor his parents could afford for his studies and as a result he ran away to Vizagapatnam in 1905 without the acknowledgment of his parents. At that time he decided to focus on the relationship between series and integrals.

One year later, Ramanujan returned to study at Pachaiyappa's College hoping to pass the First Arts examination in order he gets into the University of Madras. However he failed all but mathematics, again, because he paid all his focus towards mathematics at that time.

Just like any random person, Ramanujan had a source of inspiration. He was influenced by a famous book of G.S.Carr, A Synopsis of Elementary Results Pure Mathematics, which was basically a condensation of 5000 algebraic, calculus, trigonometric and analytical geometric equations of the late 19th century. The book significantly affected his mathematical work.

In 1908 Ramanujan began experiencing health problems while studying continuous fractions and divergent series but did not take any actions; instead he got married the following year to his nine year old distant relative, S. Janaki Ammal. However, she moved to live with him at the age of 15. In 1910 Ramanujan's hard work got paid off as he was recognised by the Collector of Nellore, Diwan Bahadur Ranchandra Rao, who was generous enough to financially help Ramanujan.

*Amita*