

# Indian Mathematicians and Their Contributions

Many mathematicians contributed things to the world of math. The numerous innovations ascribed to the Indians, have made remarkable steps in the sphere of mathematics. More than **ten Indian mathematicians** had significant contributions to present-world mathematics.

- Mathematics is all about understanding logical concepts and formulas.
- The great Indian mathematicians developed these visions based on their studies.
- The formula used for every idea is unique and contains an entire verification process.

Any question related to mathematics can be solved using the particular formula of the concept by putting the numeric values as per the query. The **contribution of Indian mathematicians** forms an integral and pivotal part of the UPSC syllabus.

## List of 10 Famous Indian Mathematicians And Their Contributions

In this article, you will learn about great Indian mathematicians and their innovations in history. Each **Indian mathematician and their contribution** record immensely to generating formulations for various mathematical concepts. Following is the list of the Indian mathematicians who gave the nation a sign of glory. The Indian mathematicians and their contributions list the discovery of zero and remarkable accomplishments in the niches of statistics, anthropometry, astronomy etc.

- P.C. Mahalanobis
- Srinivasa Ramanujan
- Satyendra Nath Bose
- Narendra Karmarkar
- Aryabhata
- Bhaskara
- Harish Chandra
- Brahmagupta
- D.R. Kaprekar
- C.R. Rao

### P.C. Mahalanobis

He was a great scientist and also among the greatest **Indian mathematician**. He was born in 1893 in Kolkata and died at the same place in 1972. He was well known for his excellent studies, such as Mahalanobis distance. It is a statistical measure that got used at that time. The compilation of the list of contributions of P.C Mahalanobis has been elucidated here. He has enlisted and made his name shine in the cumulative list of Indian Mathematicians and their contributions.

- He was among the first mathematicians on the free India planning commission.
- He was among the Mathematicians who had excellent knowledge of statistics.
- Apart from being one of the Indian mathematicians, he also studied anthropometry.
- He was also included in the formation of the Indian Statistical Institute.
- He also played a significant role and considerably contributed to designing large-scale sample surveys in India.
- Thus, his multiple interests and solid mental power helped him to deal with some of the most challenging topics in math, such as statistics and enabled the future generation to work for it.

## Srinivasa Ramanujan

Srinivasa is viewed as one of the most popular Indian Mathematicians. He was born on 22nd December 1887 and died on 26th April 1920. Although he lived for a shorter period than before, he had great inventions in math and science. However, he did not have any pure math knowledge, significantly contributing to current mathematics. The contributions of one of the most renowned and eminent mathematicians have been enlisted here. He has made his name enshrined in the list of renowned Indian mathematicians and their contributions whose innovations have embarked a splendid handout to the field of mathematics

- He worked on several formulas which are used today. However, the Abundance Formula was one of his most inspiring inventions.
- He had also researched the most contradicting value, 'pi.' He also opened the doors for current researchers to further work on this value. He calculated the fastest way of getting the value of pi.
- One of the major plus points for him was that he was a person with greater mental capacities and could solve problems in less time with very high calculation speed, which is why he is among the famous Indian mathematicians.
- He worked with his copartner Hardy on many things, including theories, on which the current researchers are working.
- In 1918, he, with his copartner, gave a non – convergent asymptotic series that was used for the computation of numbers, which can be further divided into different parts.
- After long research, this formula was given the name circle method.
- In his final years, he discovered the mock theta functions.
- Although this cannot be solved for many years after his death, they are known as holomorphic parts of Mass forms.
- He can be termed the most intelligent mathematics scholar in the contemporary world.

## Satyendra Nath Bose

He is a renowned Indian mathematician who collaborated with Albert Einstein. He played a significant role in establishing modern theoretical physics in India. He was born in the year 1894 and died in the year 1974. He had outstanding research on quantum mechanics too. He was also the person behind the Bose condensate. Check out his remarkable accomplishments that lead the path to new discoveries and innovations.

- The Govt of India also awarded him Padma Vibhushan.
- In 1924, it was the most inspiring year for all Indians because Bose had derived the Plank's, based on quantum radiation law.

- It was done by counting the number of states, and he did not have any prior knowledge about classical physics.
- It was the most exciting research because this was the most sorted calculation of Plank, which was not carried forward before in history.
- After he sent this paper to the great Albert Einstein for the complete verification of the work, Einstein was very impressed and translated this paper into German and moved it forward for the European Physics Journal.
- Later, after Bose's great success, he was elected as the head of the Physics department at the University of Kolkata when he returned to India in 1927 from Paris.
- He is the most famous and intelligent math scholar who gave this world a great vision.

## Narendra Karmarkar

Narendra Karmarkar founded an algorithm named after his name, Karmarkar's. He introduced this particular theorem in the year 1984. Apart from being on the list of famous mathematicians of India, he is also viewed as an ISI highly cited researcher. Karmarkar's algorithm is used for calculating problems related to linear programming.

- These questions are represented by several linear constraints involving many variables.
- Karmarkar also worked on a new architecture for supercomputing based on concepts of particularly projective geometry over finite fields.
- Karmarkar's algorithm has enabled the growth of many interior point techniques used in current implementations of linear program solvers.
- He has synthesized his concepts with new thoughts he calls carving free space (a non-linear analog of folding the perfect corner).

## Aryabhata

Aryabhata is one of the most famous Indian mathematicians. He was also known for his astronomy. He was born in 476 CE and he was born in Patliputra, which is currently well known as Patna. He died in 550 CE. He lived in the period of Guptas. His astronomical work was also interesting; he proved many things he assumed. Thus, he was a great mathematician with excellent knowledge and practicality.

- He also gave the correct number of days in the year.
- The most famous quadratic formula is also introduced by him which is  $(a + b)^2 = a^2 + b^2 + 2ab$ .
- He was among the great Indian Mathematicians who were the first to believe that the Earth was spherical.
- He also worked on several different things, such as giving place value using the letters which stated the numbers and their qualities.
- He also worked on the approximate value of the pi. He might also come on to the conclusion that the value of pi is irrational.
- He also worked on trigonometry and calculated the triangle area then. He had also worked on indeterminate equations, which were somewhat complex to solve.
- He also proposed the famous summation series, which included the sum of n squares and n cubes. It is also used in the current day.

## Bhaskara

A popular astronomer and one of the great Indian mathematicians, Bhaskara helped Aryabhata by dispersing his mathematical creations. He was not only viewed as a great mathematician of India but also a writer and authored a book named "Siddhanta Siromani." He is an Indian mathematician born in the 7th century. He claimed that dividing a number by zero makes it infinity, and the total of infinity and any number comes out to be infinity. The Indian mathematicians and their contributions have made new discoveries, which has lead to a greater understanding of numerous fundamentals of mathematics.

- For instance, Bhaskara used letters to denote unknown quantities, similar to current algebra, and cracked indeterminate equations of 1st and 2nd degrees.
- He solved single-type quadratic equations.
- Bhaskara studied regular polygons up to those with 384 sides and obtained an approximate value of  $\pi = 3.141666$ .
- He suggested many explanations in Brahmagupta's work, especially in obtaining a general solution to the Pell equation ( $x^2 = 1 + py^2$ ).
- Bhaskara also gave many solutions to equations like (e.g.,  $x^2 = 1 + 61y^2$ , where  $x = 1,766,319,049$  and  $y = 226,153,980$ ).

## Harish Chandra

Harish Chandra was an Indian mathematician who played a major role in physics. He was responsible for fundamental work in the representation theory, particularly describing and analysing phenomena of a periodically recurrent nature (harmonic analysis) on semi-simple Lie groups.

- Harish-Chandra's c-function is connected to the twin operator, two principal sequence expressions that arise in the Plancherel calculation for semi-simple Lie groups.
- Weyl's character formula in the representation theory he gave describes the characters of irreducible expressions of close Lie groups in terms of their highest weights.
- He developed homomorphism and isomorphism in algebra theory.
- Harish founded Schwartz space containing functions on a semisimple Lie group whose derivatives are rapidly lowering.

## Brahmagupta

Brahmagupta is also a famous ancient Indian Mathematician and an astrologer. He lived for around 69 to 70 years, was born in 598 CE, and died in 668 CE. He is well known for his discovery of zero. This invention was considered the most important event in the entire history of Mathematics. He also changed the future of math and calculation with his vision of zero.

- It is also considered that he discovered gravity in 628, written in his Sanskrit book Brahma-sphuta-siddhanta.
- He has also given the solution for a linear equation currently used worldwide.
- Later, he also proposed a solution for the general quadratic equation.
- He also has the sum of first n natural numbers by giving a formula.
- He also described how the cube root of a number could be calculated and the calculation of squares and square roots.
- He has also discussed the Pythagorean triplets. He also proposed Pell's equation.

- Thus, he was one of the most famous and knowledgeable mathematicians.

### D.R. Kaprekar

Kaprekar is also known for his significant relationship with math. He was born in the year 1905 in Dahanu, and he was a recreational mathematician. He was another great mathematician of India who defined diverse classes of natural numbers.

- He was well-known for describing the multiple classes of natural numbers. Those classes also included the Kaprekar, Harshad, and self-numbers.
- He also discovered a constant, which was also referred to by his name.
- Although he did not have any explicit or formal education in math, with great effort and practice, he published various things later known as the recreational mathematics circle.

### C.R. Rao

CR Rao is a famous Indian mathematician and was well known for his studies in statistics. His birth year is 1920, and he is still making his age about 101. Rao is currently working as an emeritus professor at Pennsylvania State University and at the University at Buffalo.

He won many prizes, which include the National Medal of Science for Mathematics and Computer Science. The Times of India classified him as one of the top 10 Indian Scientists of all time. He has done meaningful studies in the field of statistics.

- He is the person behind the "theory of estimation."
- He contributed a lot to the statistics and gave some very well-known results, so his name is always taken with great respect.
- In the whole world, his research on statistics is included in all bachelor's and master's degrees that deal with statistics.

Above is the list of the top 10 famous Indian mathematicians and their contributions. The article mentions Indian mathematicians' developments and innovations in the arithmetic field. Their valuable contributions have influenced the upcoming scientists of the modern era to launch more such beneficial concepts.