

## REAL NUMBERS WITH THEIR FASCINATING PROOFS

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### ABSTRACT

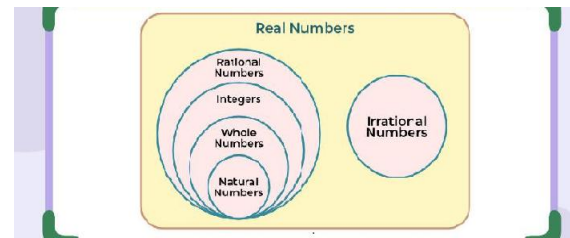
The current research aims entire fact about real no.s and another system of numbers incorporated within it. Here are a few crucial proofs including fascinating & significant applications in present scenario also in maths. Real no.s defined as numbers denoted by system of number line. The system of no. line is likely to principle ruler by which we can compute segments length in geometry of Euclidean. Real number presence invented calculus system, therefore real no. are backbone of universe. Real numbers are classified into three categories namely order property, algebraic property & completeness properties. The typical procedure of building of real no. is conversion rational no. into real no.s. The present research paper covers the study of real number in binary & decimal extension.

**Keywords:** Extension, real numbers, scenario, conversion.

### INTRODUCTION

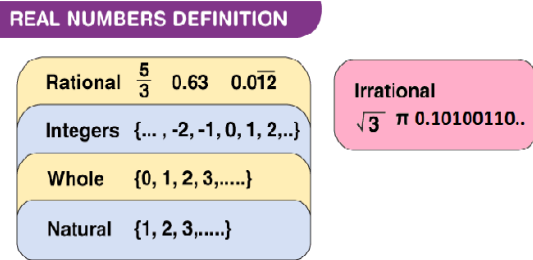
In mathematics there are no. of fields but the model of Real no.s is immense interest. There are numerous motivating applications & proofs of Real no.s. Usually Real no.s are symbolized by  $\mathbf{R}$ . It contains Integers, Natural no.s, Rational no.s & Irrational no.s. The properties namely Closure property, Associative property, Commutative property, Identity property & Inverse property are persuading by real no.s. Real No.s can be subtracted, added, divided (excluding 0) & multiplied to generate additional real numbers beneath the convention of arithmetic with the assist of algebraic rules. The rules of algebra are frequently named field properties which are found in abstract algebra are depends on 2

binary operations of addition & multiplication, in organize rules of  $\mathbf{R}$ , we obtain consequences of these properties & demonstrates their exploit in functioning with dissimilarity & in final comprehensiveness property which is used in assumption of restrictions & stability & to originate numerous elementary results pertaining to  $\mathbf{R}$ . Consequently, Real no.s is a place containing of rational & irrational numbers.



**Figure 1 - Real no. diagram**

Graphically, Real numbers are symbolized on system of number line. Integers are classified as position on contour with predetermined point 'zero' on it & set component distance (1). 0 is at midpoint on numeral line, on right part of 0 (zero) there are positive (+) integers & **negative** (-) integers are on left area. Rational numbers are also found on no. line **scheme**; they broaden themselves compactly on row. Even though **their** leftovers a space, with which there found irrational no.s.



**Figure 2 - Definition of real no.**

All real no. are performed in the outline of decimal extension, which consist finite & infinite no. of digits & decimal points. The presentation of decimal is similar to binary presentation of real no.

**REAL NUMBER IN OLD THEORY SYSTEM**

Real numbers are extension of natural number system. We attain natural no.s with the discovery of counting. Accumulation of 2 natural no.s results a natural no., but converse function of subtraction (-) is not feasible. For purpose of action of subtraction (-) is to be executed devoid of any restraint, it became essential to broaden the classification of natural no.s, with prologue of negative (-) numbers & zero. Therefore, for each natural number namely (n) there is existence of an exclusive -ve number (-n). As a consequence, a novel number system is discovered. Likewise, to formulate division feasible, model of fractions was established which is named as rational no. in which Integers & fractions included. There are no. of discoveries done by great mathematician regarding real no.s, but purposeful innovation of real no.s was primary revealed by “German Mathematician namely Julius Wilhelm Richard Dedekind”.

Real numbers include natural numbers,

rational, integers & irrational numbers whose properties are revealed below:

**1) NATURAL NUMBERS:**

Natural no.s are +ve numbers on right side of 0 on no. line which are utilized for counting purpose. Usually, these no.s are represented by capital N. In counting system natural no.s are not finite i.e. infinite. In series & sequence natural numbers (N) cooperate a vital role which is a domain set.

**i) INTEGERS:**

Integers are classified as (+) positive no., zero(0) & (-) negative numbers. Integers are symbolized by “Z” and signify by,  $Z = \{-4, -3, -2, -1, 0, 1, 2, 3, 4, \dots\}$ . on no. line.

**IntegerZero(0)**

Most primary & immense innovation in Maths is (0)Zero. Brahmgupta well known Mathematician primarily found the (0) zero in AD 628. Zero play vital role in system theory. Zero is counted in real no, rational no. & integer also. Zero is positioned at centre of no. line i.e. it is neither +ve nor -ve. Zero is dividable by 2(two) having no remainder left i.e an even number.

**RATIONAL NUMBERS:**

Rational numbers includes Integers & fractions. Usually it is symbolized by Q. The rational numbers is represented by,  $Q = A/B$  ( $A, B \in \mathbb{Z}; n \neq 0$ ). The set of rational numbers has all algebraic and order properties of real numbers but lacks the completeness property i.e there is a hole. In rational contour & this hole is crammed by irrational no.s but there is a diverse number system which is the development of regular arithmetic of (R) rational number.

**Irrational numbers:**

It is indicated by R/Q. These numbers are decimal spreading out that never repeats nor end.

### References

There are numerous functions of Real numbers in our routine life as well as in maths.

- Real numbers are utilized to compute quantities of numerous matters
- Natural no. is employed for counting purpose, for ordering & for defining. The utilization of natural no. is infinite.
- Integers are usually used in recitation temperatures above & below glacial point, a geographical level above & below level of sea, blood pressure and level of elevator when this is above & below ground level.

### CONCLUSION

In recent article, there is entire about real no., their interesting functioning & properties in routine life also in maths. The system of number built-in real no.s is imperative since they can furnish additional information all about troubles in factual life. Real numbers have important involvement in numerous mathematical perceptions & theorems.

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### REFERENCES

1. *Alain M Robert, Acoursainp-adic analysis, Springer 2000.*
2. *S.C. Maliknd Savita Arora; Mathematical Analysis; New Age International Publishers 1984.*
3. *K.g. Binmore, Mathematical Analysis, Cambridge University Press, 1977.*
4. *R.R. Gold berg; Methods of Real Analysis; Oxford and IBHPub. Co., New Delhi, 1970.*
5. *Math for Real Life, JiimLibby, McFarland&Company, 2017.*
6. *Sudhir Ghorpaade, Balmohan Limaye; A Course in Multi variable Calculus and Analysis, Springer 2006.*
7. *John D Barrow, Pinthesky, Cambridge Oxford University, 1992.*