

CLASS 9

MATHEMATICS

NCERT SOLUTIONS

NCERT Solutions for Class 9 Mathematics Chapter 3: The World of Numbers – Free PDF Download

Chapter 3 of Class 9 Maths Ganita Manjari Part 1 is The World of Numbers. It extends the number system beyond rational numbers to include irrational numbers, forming the complete set of real numbers, and covers how to represent and operate with them. These Class 9 Mathematics Chapter 3 solutions are also useful as q...

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Rational and Irrational Numbers

A **rational number** can be expressed as p/q , where p and q are integers and $q \neq 0$ (its decimal expansion is either terminating or non-terminating repeating). An **irrational number** cannot be expressed as p/q (its decimal expansion is non-terminating and non-repeating), e.g. $\sqrt{2}$, $\sqrt{3}$, π .

Real Numbers

The set of **real numbers** includes all rational and irrational numbers together. Every real number corresponds to a unique point on the **number line**, and every point on the number line represents a unique real number.

Representing Irrational Numbers on the Number Line

Irrational numbers like $\sqrt{2}$ can be located precisely on the number line using geometric constructions based on the Pythagoras theorem (e.g. constructing a right triangle with legs of length 1 and 1 gives a hypotenuse of $\sqrt{2}$).

Operations on Real Numbers

The sum, difference, product, or quotient of two rational numbers is always rational. The sum or difference of a rational and an irrational number is always irrational. The sum, product, etc. of two irrational numbers can be rational or irrational depending on the numbers involved.

Laws of Exponents for Real Numbers

For positive real numbers a , b and rational exponents m , n : $a^m \times a^n = a^{m+n}$; $a^m / a^n = a^{m-n}$; $(a^m)^n = a^{mn}$; $a^m \times b^m = (ab)^m$.

Rationalisation

Rationalising the denominator means converting an expression with an irrational denominator into an equivalent one with a rational denominator, typically by multiplying by a suitable conjugate or the same irrational term.

Class 9 Mathematics Chapter 3 – Notes and Extra Questions

Along with these NCERT Solutions, students can also use the [Class 9 Mathematics Chapter 3 Extra Questions](#) and [Class 9 Mathematics Chapter 3 Revision Notes](#) for quick revision and extra practice.

See also: [Chapter 1](#) | [Chapter 2](#)

Practice more: [Chapter 1](#) | [Chapter 2](#)

Quick revision: [Chapter 1](#) | [Chapter 2](#)

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