

IIT JEE Mathematics – Chapter-wise Core Concepts

1. Sets, Relations & Functions

- Types of sets, Venn diagrams, domain & range, injective/surjective/bijective functions.

2. Complex Numbers

- Argand plane, polar & Euler form, De Moivre theorem, roots of complex numbers.

3. Quadratic Equations

- Nature of roots, discriminant, transformation of equations, quadratic inequalities.

4. Sequences & Series

- AP, GP, HP, sum formulas, AM-GM-HM inequality.

5. Permutation & Combination

- Counting principle, arrangements, selections, circular permutation.

6. Binomial Theorem

- General term, binomial expansion for any rational index.

7. Probability

- Conditional probability, Bayes' theorem, independent events.

8. Trigonometry

- Identities, equations, heights & distances, C-D formulas.

9. Coordinate Geometry

- Straight lines, circles, parabola, ellipse, hyperbola.

10. Vector & 3D Geometry

- Dot & cross products, direction cosines, lines & planes in 3D.

11. Limits, Continuity & Differentiability

- L'Hospital rule, standard limits, continuity tests.

12. Differentiation

- Chain rule, implicit differentiation, logarithmic differentiation.

13. Applications of Derivatives

- Maxima-minima, tangent/normal, monotonicity.

14. Indefinite & Definite Integration

- Standard integrals, substitution, parts, properties of definite integrals.

15. Differential Equations

- First order, linear DE, homogeneous DE.

16. Matrices & Determinants

- Inverse, rank, adjoint, Cramer's rule.

17. Statistics

- Mean, median, variance, standard deviation.