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CHAPTER NOTES

JEE Main 2027 Maths Hot Topics - Chapter-Wise Weightage

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JEE Main 2027 Maths Hot Topics - Chapter-Wise Weightage (Free PDF)

JEE Main 2027 Mathematics - Hot Topics Analysis from 2021–2025 trends. Maths section: **30 questions, 100 marks**. Algebra (~39%) + Calculus (~31%) + Coordinate/3D Geometry (~27%) dominate. These 20 chapters cover 85%+ of the paper.

JEE Main 2027 Session 1: expected January 2027. Session 2: expected April 2027 (dates to be announced by NTA). On-screen calculator available for all candidates.

Topic-Area Distribution (2025)

- Algebra: 39.4%
- Calculus: 30.7%
- Coordinate Geometry (2D): 15.4%
- 3D Geometry & Vectors: 12.0%
- Trigonometry: 2.5%

Hot Topics Ranked by Weightage (2021–2025)

Three-Dimensional Geometry - 7.35% weightage (Class 12)

Key concepts: Direction cosines/ratios, line/plane equations, shortest distance, angle between lines/planes

Question pattern: 2–3 questions. Shortest distance between skew lines, foot of perpendicular.

Sequences and Series - 5.74% weightage (Class 11)

Key concepts: AP, GP, HP, AM–GM inequality, sum of special series, AGP

Question pattern: 2 questions. Sum to n terms, mixed sequences.

Limit, Continuity and Differentiability - 5.50% weightage (Class 12)

Key concepts: L'Hôpital, indeterminate forms, continuity at a point, differentiability

Question pattern: 2 questions. Limits using expansions, piecewise continuity.

Definite Integration - 5.08% weightage (Class 12)

Key concepts: Properties, area under curve, king–queen property, Wallis formula

Question pattern: 2 questions. Property-based evaluation, area calculation.

Binomial Theorem - 5.05% weightage (Class 11)

Key concepts: General term, middle term, greatest term, multinomial

Question pattern: 2 questions. Coefficient finding, term-based problems.

Complex Numbers - 4.75% weightage (Class 11)

Key concepts: Modulus, argument, De Moivre, cube roots of unity, locus

Question pattern: 1-2 questions. Locus, nth roots, argand plane.

Applications of Derivatives - 4.75% weightage (Class 12)

Key concepts: Tangent/normal, maxima/minima, monotonicity, rate of change

Question pattern: 1-2 questions. Optimisation, curve sketching.

Vector Algebra - 4.69% weightage (Class 12)

Key concepts: Dot/cross product, scalar triple product, projection, vector equations

Question pattern: 1-2 questions. Triple products, geometric interpretations.

Differential Equations - 4.16% weightage (Class 12)

Key concepts: Variable separable, homogeneous, linear DE, integrating factor

Question pattern: 1-2 questions. Linear DE with IF, order/degree.

Determinants - 4.00% weightage (Class 12)

Key concepts: Properties, cofactor expansion, area of triangle, system of equations

Question pattern: 1-2 questions. Property application, consistency.

Permutations and Combinations - 3.60% weightage (Class 11)

Key concepts: Arrangements, combinations, division into groups, circular permutations

Question pattern: 1-2 questions. Restricted arrangements, distribution problems.

Quadratic Equations - 3.30% weightage (Class 11)

Key concepts: Roots, discriminant, sum/product, quadratic inequalities, common roots

Question pattern: 1-2 questions. Range of parameters, common-root problems.

Indefinite Integration - 3.2% weightage (Class 12)

Key concepts: Substitution, parts, partial fractions, trig integrals

Question pattern: 1-2 questions. Method selection, standard integrals.

Matrices - 3.1% weightage (Class 12)

Key concepts: Types, operations, inverse, rank, adjoint, system of linear equations

Question pattern: 1-2 questions. Inverse existence, elementary operations.

Probability - 3.0% weightage (Class 11-12)

Key concepts: Conditional probability, Bayes theorem, binomial distribution, independence

Question pattern: 1-2 questions. Bayes-based, combined events.

Straight Lines (2D) - 2.9% weightage (Class 11)

Key concepts: Slope, forms of line equation, angle, family of lines, distance formulas

Question pattern: 1-2 questions. Family of lines, angle bisectors.

Circles - 2.8% weightage (Class 11)

Key concepts: Equation forms, tangent, chord of contact, family of circles, orthogonality

Question pattern: 1-2 questions. Tangent length, family of circles.

Conic Sections (Parabola, Ellipse, Hyperbola) - 2.7% weightage (Class 11)

Key concepts: Standard equations, focal properties, tangent/normal, eccentricity

Question pattern: 1-2 questions. Tangent equations, focal chord.

Trigonometric Functions & Equations - 2.5% weightage (Class 11)

Key concepts: Identities, transformations, general solutions, max/min of trig expressions

Question pattern: 1-2 questions. General solutions, trig identities.

Sets, Relations and Functions - 2.3% weightage (Class 11-12)

Key concepts: Types of functions, composition, inverse, equivalence relations

Question pattern: 1 question. Function type identification, inverse finding.

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