NDA MATHEMATICS SYLLABUS 2026

By NDA Study – Gateway to NDA

COMPLETE TOPIC CHECKLIST & PREPARATION GUIDE

Official UPSC Notification Date: December 10, 2025
NDA 1 2026 Exam Date: April 12, 2026
Paper: Mathematics | **Marks:** 300 | **Questions:** 120 | **Duration:** 2.5 Hours
Negative Marking: -0.83 per wrong answer | **Correct Answer:** +2.5 marks
Qualifying Cutoff: 25% marks (75+ marks minimum)

Source: NDA Study or https://ndastudy.com/

RECENT YEAR CUTOFF ANALYSIS (Decision-Critical Data)

Written Exam Cutoffs (Out of 900):

Year	Exam	Cutoff	Difficulty	Good Attempts (Maths)
2025	NDA 1	305+	Moderate	30-35 Q (75-87.5 marks)
2025	NDA 2	~365	Moderate-Tough	35-40 Q (87.5-100 marks)
2024	NDA 1	291	Easy-Moderate	28-32 Q (70-80 marks)
2024	NDA 2	305	Easy-Moderate	30-35 Q (75-87.5 marks)
2023	NDA 1	301	Moderate	30-35 Q (75-87.5 marks)
2023	NDA 2	292	Easy	28-30 Q (70-75 marks)

Year	Exam	Cutoff	Difficulty	Good Attempts (Maths)
2022	NDA 1	360	Hard	35-40 Q (87.5-100 marks)

Key Insight: To **guarantee SSB call**, aim for **90+ marks in Maths** (36-40 questions correct) across any year.

Final Selection Cutoffs (Written + SSB Out of 1800):

Year	Final Cutoff	Minimum Maths Req.
2025 NDA 1	673/1800	75+ (to qualify)
2024 NDA 2	673/1800	75+ (to qualify)
2023 NDA 1	664/1800	75+ (to qualify)
2022 NDA 1	720/1800	90+ (competitive)

Verdict: 25% cutoff is survival; 33%+ in Maths = strong candidate.

CHAPTER-WISE QUESTION DISTRIBUTION (PYQ Analysis 2023-2025)

Topic Trend Analysis from Previous Year Questions:

Chapter	2025 NDA1	2025 NDA2	2024 Avg	Difficulty Trend	Priority
Trigonometry	9Q (Easy)	8Q (Easy)	10-12Q	EASY (consistent)	🟠 HIGH
Height & Distance	2Q (Easy)	2Q (Easy)	2-3Q	EASY (fixed)	🟡 MODERATE
Sequence & Series (AP/GP)	8Q (Normal)	7Q (Normal)	8-10Q	MODERATE	🔴 CRITICAL

Chapter	2025 NDA1	2025 NDA2	2024 Avg	Difficulty Trend	Priority
Quadratic Equations	4Q (Easy)	6Q (Easy)	5-7Q	EASY (increasing)	🔴 CRITICAL
Complex Numbers	5Q (Hard)	2Q (Hard)	3-5Q	HARD (variable)	🟡 MODERATE
Permutation & Combination	7Q (Easy)	7Q (Easy)	7-8Q	EASY (consistent)	🟠 HIGH
Binomial Theorem	3Q (Normal)	3Q (Normal)	2-3Q	MODERATE	🟡 MODERATE
Matrices & Determinants	7Q (Normal)	9Q (Normal)	7-10Q	MODERATE	🔴 CRITICAL
Probability	7Q (Normal)	3Q (Normal)	5-8Q	MODERATE (variable)	🟠 HIGH
Sets, Relations, Functions	7Q (Easy)	7Q (Easy)	6-8Q	EASY (fixed)	🟠 HIGH
Limits, Continuity, Diff.	6Q (Normal)	4Q (Normal)	5-7Q	MODERATE	🔴 CRITICAL
Differentiation & Applications	6Q (Hard)	5Q (Hard)	5-8Q	HARD	🔴 CRITICAL
Integration & Applications	9Q (Easy)	5Q (Easy)	6-9Q	EASY (abundant marks)	🔴 CRITICAL

Chapter	2025 NDA1	2025 NDA2	2024 Avg	Difficulty Trend	Priority
Differential Equations	6Q (Easy)	6Q (Easy)	4-6Q	EASY (consistent)	🔴 CRITICAL
Vectors (2D/3D)	6Q (Hard)	6Q (Hard)	5-8Q	HARD	🟠 HIGH
Conic Sections	2Q (Hard)	3Q (Hard)	2-3Q	HARD (rare)	🟡 MODERATE
3D Geometry (Lines, Planes)	5Q (Normal)	5Q (Normal)	4-6Q	MODERATE	🟠 HIGH
Straight Lines, Circles	7Q (Normal)	3Q (Normal)	5-8Q	MODERATE	🟠 HIGH
Statistics & DI	6Q (Normal)	6Q (Normal)	5-7Q	MODERATE	🟡 MODERATE
Inequality & Logarithms	1Q (Easy)	1Q (Easy)	1-2Q	EASY (rare)	🟡 MODERATE

Key PYQ Trends:

- ✅ **Trigonometry:** ALWAYS EASY (9-10Q guaranteed) = 25 marks secured
- ✅ **Integration & Calculus:** MOST ABUNDANT (15-18Q total) = 37.5-45 marks opportunity
- ✅ **Algebra (P&C, Quadratic, AP/GP):** CONSISTENTLY TESTED (15-18Q) = 37.5-45 marks
- ✅ **Matrices & Determinants:** REGULAR (7-9Q) = 17.5-22.5 marks
- ⚠️ **Hard Topics (Vectors, Conic, Complex):** Less frequent but test depth = 15-20 marks

---

OFFICIAL SYLLABUS BREAKDOWN (UPSC Notification Dec 10, 2025)

ALGEBRA (33% Weightage = 90-100 Marks)

Expected: 36-40 questions

✅ **ALGEBRA FUNDAMENTALS**

- **Quadratic Equations**
  - Discriminant ($D = b^2 - 4ac$)
  - Nature of roots (real, imaginary, equal)
  - Sum of roots = -b/a; Product = c/a
  - Forming equations from roots
  - Interval problems (roots in specific range)
  - PYQ Frequency: 4-6Q | Difficulty: EASY
- **Logarithms & Exponentials**
  - Properties: log(ab) = log a + log b
  - log(a/b) = log a - log b
  - log(a^n) = n log a
  - Change of base formula
  - Solving exponential equations
  - PYQ Frequency: 1-2Q | Difficulty: EASY
- **Binomial Theorem**
  - (a+b)^n expansion
  - General term T_{r+1}
  - Binomial coefficient identities
  - Finding specific terms
  - PYQ Frequency: 2-3Q | Difficulty: MODERATE
- **Arithmetic & Geometric Progressions**
  - AP: nth term = a + (n-1)d; Sum = n/2[2a + (n-1)d]
  - GP: nth term = ar^(n-1); Sum = a(r^n - 1)/(r-1)

    - Arithmetic Mean & Geometric Mean
    - Harmonic Progression basics
    - Sum to infinity (GP)
    - PYQ Frequency: 8-10Q | Difficulty: MODERATE-EASY
- **Permutations & Combinations**
    - nPr = n!/(n-r)!; nCr = n!/(r!(n-r)!)
    - Fundamental counting principle
    - Arrangements with repetitions
    - Circular permutations
    - Combinations with specific conditions
    - PYQ Frequency: 7-8Q | Difficulty: EASY
- **Sets, Venn Diagrams & Relations**
    - Set operations (Union, Intersection, Complement)
    - De Morgan's Laws
    - Venn diagram problems
    - Relations and functions
    - Domain, Range, Codomain
    - PYQ Frequency: 7-8Q | Difficulty: EASY
- **Complex Numbers** ⚠️ HARD TOPIC
    - $i^2 = -1$; modulus $|z|$; conjugate
    - Operations (addition, subtraction, multiplication, division)
    - Argand diagram
    - De Moivre's theorem
    - Cube roots of unity
    - PYQ Frequency: 2-5Q | Difficulty: HARD
- **Linear Inequations**

- Solving linear inequalities
- Graphical representation
- System of inequalities
- PYQ Frequency: 0-2Q | Difficulty: EASY

TRIGONOMETRY (17% Weightage = 50 Marks)

Expected: 20 questions (EASY - High Accuracy Topic)

✅ **TRIGONOMETRIC FUNDAMENTALS**

- **Trigonometric Ratios & Identities**
  - $\sin^2\theta + \cos^2\theta = 1$ (fundamental)
  - $1 + \tan^2\theta = \sec^2\theta$
  - $1 + \cot^2\theta = \operatorname{cosec}^2\theta$
  - Complementary angle formulas
  - Supplementary angle formulas
  - Multiple angle formulas: $\sin 2\theta$, $\cos 2\theta$, $\tan 2\theta$
  - Half-angle formulas
  - Product-to-sum & sum-to-product formulas
  - PYQ Frequency: 8-10Q | Difficulty: EASY
- **Inverse Trigonometry**
  - $\sin^{-1}(x)$: range $[-\pi/2, \pi/2]$
  - $\cos^{-1}(x)$: range $[0, \pi]$
  - $\tan^{-1}(x)$: range $(-\pi/2, \pi/2)$
  - Compositions: $\sin(\sin^{-1} x) = x$
  - Finding angles in specific ranges
  - Properties: $\sin^{-1}(-x) = -\sin^{-1}(x)$
  - PYQ Frequency: 3-4Q | Difficulty: EASY

- **Heights & Distances** (Angle of Elevation/Depression)
    - tan θ = opposite/adjacent problems
    - Observer angle problems (towers, buildings, objects)
    - Double elevation/depression problems
    - PYQ Frequency: 2-3Q | Difficulty: EASY
- **Trigonometric Equations**
    - sin x = sin α solutions
    - cos x = cos α solutions
    - tan x = tan α solutions
    - General solutions in [0, 2π]
    - PYQ Frequency: 1-2Q | Difficulty: MODERATE

📊 **Trigonometry Strategy:** High-yield, consistent EASY marks. Master identities + inverse trig + heights/distances = 45-50 marks (18+ questions correct).

ANALYTICAL GEOMETRY (17% Weightage = 50 Marks)

Expected: 20 questions

✅ **2D GEOMETRY**

- **Straight Lines (8-10Q)**
    - Equation forms: $ax + by + c = 0$, $y = mx + c$, two-point form
    - Slope: $m = (y_2 - y_1)/(x_2 - x_1)$
    - Angle between two lines: $\tan\theta = |(m_1 - m_2)/(1 + m_1m_2)|$
    - Perpendicular & parallel lines
    - Distance of point from line: $d = |ax_o + by_o + c|/\sqrt{(a^2 + b^2)}$
    - Foot of perpendicular, reflection
    - PYQ Difficulty: MODERATE-EASY
- **Circles (4-5Q)**

- Standard form: $(x - h)^2 + (y - k)^2 = r^2$
- General form: $x^2 + y^2 + 2gx + 2fy + c = 0$
- Center: $(-g, -f)$; Radius: $\sqrt{(g^2 + f^2 - c)}$
- Equation of tangent at point
- Equation of chord of contact
- Family of circles
- PYQ Difficulty: MODERATE-EASY

- **Conic Sections** ⚠️ HARD TOPIC (2-3Q)
  - **Parabola:** $y^2 = 4ax$ (focus, directrix, latus rectum)
  - **Ellipse:** $x^2/a^2 + y^2/b^2 = 1$ (foci, eccentricity)
  - **Hyperbola:** $x^2/a^2 - y^2/b^2 = 1$
  - Standard form equations & properties
  - PYQ Difficulty: HARD

✅ **3D GEOMETRY (4-6Q)**

- **Distance Formula**
  - Distance between points: $\sqrt{[(x_2-x_1)^2 + (y_2-y_1)^2 + (z_2-z_1)^2]}$
  - Distance from origin: $\sqrt{(x^2 + y^2 + z^2)}$
- **Direction Cosines & Direction Ratios**
  - If direction ratios = (a, b, c), then direction cosines = $(a/\sqrt{(a^2+b^2+c^2)}, ...)$
  - $l^2 + m^2 + n^2 = 1$ (always)
- **3D Lines & Planes**
  - Equation of line: $(x-x_o)/l = (y-y_o)/m = (z-z_o)/n$
  - Equation of plane: $ax + by + cz + d = 0$
  - Distance from point to plane

CALCULUS (18% Weightage = 50-62.5 Marks)

Expected: 20-25 questions (HIGH-VALUE TOPIC)

✅ **DIFFERENTIAL CALCULUS**

- **Limits & Continuity (4-6Q)**
  - lim (f(x)) as x → a
  - L'Hôpital's Rule (0/0, ∞/∞ forms)
  - Continuity definition: lim f(x) = f(a)
  - Removable discontinuity
  - PYQ Difficulty: MODERATE
- **Derivatives (6-8Q)**
  - First principles: lim [f(x+h) - f(x)]/h
  - **Power Rule:** d/dx(x^n) = nx^(n-1)
  - **Product Rule:** d/dx(uv) = u'v + uv'
  - **Quotient Rule:** d/dx(u/v) = (u'v - uv')/v²
  - **Chain Rule:** d/dx[f(g(x))] = f'(g(x)) · g'(x)
  - Derivatives of trig, log, exponential functions
  - PYQ Difficulty: MODERATE-HARD
- **Applications of Derivatives (5-8Q) - Maxima & Minima (HIGH-VALUE)**
  - First derivative test (increasing/decreasing functions)
  - Second derivative test (local max/min)
  - Critical points & stationary points
  - Optimization problems (maximize area, minimize cost, etc.)
  - Concavity & inflection points
  - PYQ Difficulty: HARD (but frequently tested)

✅ **INTEGRAL CALCULUS**

- **Integration (8-10Q) - ABUNDANT MARKS**
  - Antiderivatives & indefinite integrals

- **Standard Formulas:** ∫x^n dx, ∫e^x dx, ∫1/x dx, ∫sin x dx, ∫cos x dx, etc.
- **Integration by Substitution (u-substitution):** Most tested method
- **Integration by Parts:** ∫u dv = uv - ∫v du
- **Partial Fractions:** Breaking down rational functions
- PYQ Difficulty: EASY-MODERATE

- **Definite Integrals & Area Under Curves (4-6Q)**
  - ∫[a to b] f(x) dx = F(b) - F(a)
  - Properties of definite integrals
  - Area between curves
  - PYQ Difficulty: EASY-MODERATE
- **Differential Equations (4-6Q)**
  - First-order, first-degree differential equations
  - Separable variables: dy/dx = f(x)g(y)
  - Linear differential equations
  - Solution methods
  - PYQ Difficulty: EASY

VECTORS & 3D (Part of Algebra + Geometry, ~10-12Q)

✅ **VECTOR ALGEBRA**

- **Vectors: Basics (Included in Algebra 33%)**
  - Magnitude $|v| = \sqrt{(v_x^2 + v_y^2 + v_z^2)}$
  - Direction: direction cosines (l, m, n)
  - Unit vector: $\hat{u} = v/|v|$
  - Operations: addition, subtraction, scalar multiplication
- **Dot Product (Scalar Product)** (3-4Q)
  - $a \cdot b = |a||b| \cos \theta$

    - Finding angle between vectors
    - Perpendicularity check: a · b = 0
    - Projection of a onto b
- **Cross Product (Vector Product)** ⚠️ HARD (3-4Q)
    - a × b = |a||b| sin θ (magnitude)
    - Direction: right-hand rule
    - Area of parallelogram: |a × b|
    - Perpendicularity check: parallel if a × b = 0
    - Anti-commutative: a × b = -(b × a)
- **Applications**
    - Work = F · d (dot product)
    - Torque = r × F (cross product)
    - Area of triangle & parallelogram
    - Coplanar vectors

PYQ Frequency: 6Q (Hard) | **Strategy:** Vectors combine with 3D geometry; often paired.

MATRICES & DETERMINANTS (8% Weightage = 25 Marks)

Expected: 10 questions

✅ **MATRIX FUNDAMENTALS**

- **Types of Matrices**
    - Row matrix, column matrix, square matrix
    - Identity matrix I (diagonal = 1, rest = 0)
    - Transpose: swap rows & columns
    - Symmetric: A^T = A
    - Orthogonal: A · A^T = I
    - PYQ Frequency: 2Q | Difficulty: EASY

- **Matrix Operations**
  - Addition & subtraction (same dimensions)
  - Multiplication: (m×n) · (n×p) = (m×p)
  - Scalar multiplication: kA
  - Properties: Associative, distributive (but NOT commutative)
  - PYQ Frequency: 3Q | Difficulty: EASY
- **Determinants (Calculation)**
  - 2×2 determinant: ad - bc
  - 3×3 determinant: Expansion by rows/columns (cofactor method)
  - **Shortcut (Diagonal method for 3×3):** aei + bfg + cdh - ceg - bdi - afh
  - Properties: row swap = -det; row multiple = k·det
  - PYQ Frequency: 2Q | Difficulty: MODERATE
- **Inverse of Matrix**
  - Condition: det(A) ≠ 0 (A must be invertible/non-singular)
  - Formula: A^(-1) = adj(A) / |A|
  - Adjoint = transpose of cofactor matrix
  - Verification: A · A^(-1) = I
  - PYQ Frequency: 1Q | Difficulty: MODERATE
- **Cramer's Rule (Systems of Linear Equations)** - HIGH-VALUE
  - For system: ax + by = p; cx + dy = q
  - x = |p b|/|a b|; y = |a p|/|a b|
  - |q d| |c d| |c q| |c d|
  - Extends to 3×3 systems
  - PYQ Frequency: 2Q | Difficulty: EASY (fast method)

Key Strategy: Matrices are systematic. Master determinant shortcuts = quick 25 marks.

STATISTICS & PROBABILITY (8% Weightage = 25 Marks)

Expected: 10 questions

✅ STATISTICS

- **Descriptive Statistics (3-4Q)**
  - Mean (average): Σx/n
  - Median (middle value when sorted)
  - Mode (most frequent value)
  - Range: max - min
  - PYQ Difficulty: EASY
- **Dispersion Measures (2-3Q)**
  - **Standard Deviation (σ):** √[Σ(x - mean)²/n]
  - **Variance (σ²):** [Σ(x - mean)²/n]
  - Properties: SD of (ax + b) = |a| · SD(x)
  - Coefficient of variation: CV = σ/mean
  - PYQ Difficulty: MODERATE

✅ PROBABILITY

- **Fundamentals (2-3Q)**
  - Sample space S: all possible outcomes
  - Event E: subset of S
  - P(E) = n(E)/n(S) (classical definition)
  - 0 ≤ P(E) ≤ 1
  - Complementary event: P(E') = 1 - P(E)
  - PYQ Difficulty: EASY
- **Compound Probability (2-3Q)**
  - **Addition:** P(A∪B) = P(A) + P(B) - P(A∩B)
  - **Multiplication:** P(A∩B) = P(A) · P(B|A)

- **Independent Events:** $P(A \cap B) = P(A) \cdot P(B)$
- **Conditional Probability:** $P(A|B) = P(A \cap B)/P(B)$
- **Bayes' Theorem:** $P(A|B) = P(B|A) \cdot P(A) / P(B)$
- PYQ Difficulty: MODERATE-HARD

- **Probability Distributions (1-2Q)**
  - **Binomial Distribution:** P(X=k) = nCk · p^k · (1-p)^(n-k)
  - **Mean:** μ = np; **Variance:** σ^2 = np(1-p)
  - Expected value
  - PYQ Frequency: 1-2Q | Difficulty: MODERATE

Key Strategy: Probability = understanding relationships. Bayes' theorem is high-value if mastered.

COMPLETE TOPIC CHECKLIST

PHASE 1: FOUNDATION TOPICS (Weeks 1-6)

Week 1-2: ALGEBRA BASICS

- Quadratic Equations (Discriminant, roots, sum/product)
- Linear Inequations
- Logarithms & Exponentials (Properties)
- **Target:** 5-6 questions, 12.5-15 marks

Week 3-4: PROGRESSION & COUNTING

- Arithmetic Progressions (AP)
- Geometric Progressions (GP)
- Binomial Theorem
- Permutations & Combinations
- **Target:** 10-12 questions, 25-30 marks

Week 5-6: SETS & FUNDAMENTALS

- Sets, Relations, Functions
- Complex Numbers
- **Target:** 7-8 questions, 17.5-20 marks

PHASE 1 GOAL: 22-26 questions, 55-65 marks = Foundation solid

---

PHASE 2: CORE TOPICS (Weeks 7-12)

Week 7-8: TRIGONOMETRY (Easy wins!)

- Trigonometric Ratios & Identities
- Inverse Trigonometry
- Heights & Distances
- Trigonometric Equations
- **Target:** 18-20 questions, 45-50 marks (MUST achieve!)

Week 9-10: COORDINATE GEOMETRY

- Straight Lines (All forms)
- Circles (Standard & general forms)
- 3D Geometry (Distance, direction cosines)
- Conic Sections (Parabola, ellipse if time)
- **Target:** 12-15 questions, 30-37.5 marks

Week 11-12: MATRICES & DETERMINANTS

- Matrix operations
- Determinants (2×2, 3×3)
- Matrix inverse & Cramer's Rule
- **Target:** 8-10 questions, 20-25 marks

PHASE 2 GOAL: 38-45 questions, 95-112.5 marks

PHASE 3: CALCULUS (Weeks 13-18) - HIGHEST VALUE

Week 13-14: LIMITS & DERIVATIVES

- Limits & Continuity
- Derivatives (Power, product, quotient, chain rules)
- **Target:** 8-10 questions, 20-25 marks

Week 15-16: OPTIMIZATION (Maxima & Minima) - CRITICAL

- First & second derivative tests
- Increasing/decreasing functions
- Optimization (area, cost, volume)
- **Target:** 6-8 questions, 15-20 marks (HARD but rewarding)

Week 17-18: INTEGRATION (Most abundant marks!)

- Integration by substitution (u-substitution)
- Integration by parts
- Definite integrals & area
- Differential equations
- **Target:** 12-14 questions, 30-35 marks

PHASE 3 GOAL: 26-32 questions, 65-80 marks

PHASE 4: ADVANCED & PROBABILITY (Weeks 19-21)

Week 19: VECTORS (Hard topic!)

- Dot product (easier)
- Cross product (harder)
- Applications
- **Target:** 5-6 questions, 12.5-15 marks

Week 20-21: STATISTICS & PROBABILITY

- Mean, median, mode
- Standard deviation & variance

- Probability fundamentals
- Conditional probability & Bayes' theorem
- Binomial distribution
- **Target:** 8-10 questions, 20-25 marks

PHASE 4 GOAL: 13-16 questions, 32.5-40 marks

PHASE 5: REVISION & MOCK TESTS (Weeks 22-24)

Week 22: WEAK AREAS DEEP DIVE

- Identify chapters with <70% accuracy
- Re-solve PYQs from weak areas
- Formula revision

Week 23: FULL MOCK TESTS

- Take 2-3 full 120-question, 2.5-hour mock tests
- Simulate exam conditions
- Analyze weak topics

Week 24: FINAL POLISH

- Daily timed quizzes (10-20 questions)
- Formula sheet memorization
- Strategic test-taking (identify easy Qs first)

CUMULATIVE GOAL (All Phases): 105-120 questions, 262.5-300 marks

---

QUESTION TYPES & STRATEGIES (Based on PYQ Analysis)

EASY QUESTIONS (Guaranteed marks):

- Trigonometry identities & inverse trig (9Q)
- Heights & distances (2Q)
- Permutations & combinations (7Q)

- Quadratic equations (4Q)
- Sets & relations (7Q)
- Integration formulas (9Q)
- Differential equations (6Q)

Easy Total: ~44 questions = 110 marks (Score at least 40Q here = 100 marks)

MODERATE QUESTIONS (Good attempt):

- AP/GP (8Q)
- Matrices & determinants (7Q)
- Straight lines & circles (7Q)
- Limits & continuity (5Q)
- Probability (6Q)
- Statistics (4Q)

Moderate Total: ~37 questions = 92.5 marks (Score at least 28Q = 70 marks)

HARD QUESTIONS (Attempt if time):

- Complex numbers (4Q)
- Differentiation & applications (6Q)
- Vectors (6Q)
- Conic sections (2Q)
- Optimization (maxima/minima) (6Q)

Hard Total: ~24 questions = 60 marks (Score at least 12Q = 30 marks)

YEAR-WISE STRATEGY (Aiming for Cutoff 2026)

Conservative Plan (Aim: 75+ marks = 25% cutoff):

1. **Master all EASY questions:** 40+ questions = 100+ marks ✓
2. **Attempt 50% of MODERATE:** 14 questions = 35 marks
3. Skip all HARD questions

Total: ~54-55 questions = 135-137.5 marks (SAFE cutoff)

Competitive Plan (Aim: 90+ marks = Ensure SSB):

1. **Master all EASY questions:** 44+ questions = 110+ marks
2. **Attempt 80% of MODERATE:** 30 questions = 75 marks
3. **Attempt 30% of HARD:** 7 questions = 17.5 marks

Total: ~81 questions = 202.5 marks (STRONG selection chance)

Aggressive Plan (Aim: 120+ marks = Top ranks):

1. **Perfect all EASY:** 44 questions = 110 marks
2. **Perfect all MODERATE:** 37 questions = 92.5 marks
3. **Score 50% in HARD:** 12 questions = 30 marks

Total: ~93 questions = 232.5 marks (HIGH selection probability)

DAILY PREPARATION ROUTINE (150-200 hour plan)

Daily Schedule (6 hours/day, 25 weeks):

Morning Session (2 hours):

- 20 minutes: Concept review (today's topic)
- 80 minutes: Solve 8-10 practice problems (mixed difficulty)
- Accuracy check: Target 70%+ correct

Afternoon Session (2 hours):

- 20 minutes: Formula/identity revision
- 80 minutes: Solve 10-12 more practice problems
- Different topic from morning

Evening Session (2 hours):

- 90 minutes: Timed quiz (10-15 questions, simulate exam)
- 30 minutes: Analyze mistakes, write in "mistake journal"

Weekly Additions:

- Saturday: Full mock test (120Q, 2.5 hrs)
- Sunday: Weak area revision + conceptual questions

SCORING TARGETS BY PHASE

Phase	Week	Topic	Target Q	Target Marks	Cumulative
1	1-6	Foundation	22-26	55-65	55-65
2	7-12	Core	38-45	95-112.5	150-177.5
3	13-18	Calculus	26-32	65-80	215-257.5
4	19-21	Advanced	13-16	32.5-40	247.5-297.5
5	22-24	Revision	—	+5-10	**252.5-307.5**

Final Target: 252.5-307.5 marks (84-102.5% of 300) = **GUARANTEED SELECTION**

COMMON MISTAKES TO AVOID (Cost Analysis)

Mistake	Cost	Prevention
Missing domain restrictions (log, √)	-2.5 marks	Check domain for every problem
Confusing degree vs radian	-2.5 marks	Always specify unit in trig
Wrong chain rule application	-2.5 marks	Practice 20 chain rule problems
Integration by parts (wrong u, dv)	-2.5 marks	Use LIATE rule (Log, Inverse, Algebraic, Trig, Exp)

Mistake	Cost	Prevention
Determinant calculation error	-2.5 marks	Use diagonal method for 3×3
Misidentifying conic sections	-2.5 marks	Memorize standard forms
Forgetting -1 in complementary angle	-2.5 marks	Derive identities, don't memorize
Guessing in hard topics	-0.83 marks	Skip instead of guess
Ignoring negative marking	-0.83 per error	Maintain 85%+ accuracy in attempts
Total time wasted	**10-15 marks**	Follow daily routine strictly

---

FORMULA SHEET (Top 50 - Memorize First)

Algebra:

1. Quadratic roots: $x = [-b \pm \sqrt{(b^2-4ac)}]/2a$
2. AP nth term: $a_n = a + (n-1)d$
3. AP sum: $S_n = n/2[2a + (n-1)d]$
4. GP nth term: $a_n = ar^{(n-1)}$
5. GP sum: $S_n = a(r^{n-1})/(r-1)$; $S_\infty = a/(1-r)$
6. $nCr = n!/(r!(n-r)!)$
7. $nPr = n!/(n-r)!$
8. Binomial: $(a+b)^n = \Sigma\ nCr\ a^{(n-r)}\ b^r$

Trigonometry:

9. $\sin^2\theta + \cos^2\theta = 1$

10. $1 + \tan^2\theta = \sec^2\theta$

11. $\sin 2\theta = 2 \sin \theta \cos \theta$

12. $\cos 2\theta = \cos^2\theta - \sin^2\theta = 2\cos^2\theta - 1$

13. $\tan 2\theta = 2 \tan \theta/(1 - \tan^2\theta)$

Calculus:

14. d/dx[x^n] = nx^(n-1)

15. d/dx[e^x] = e^x

16. d/dx[ln x] = 1/x

17. d/dx[sin x] = cos x

18. d/dx[cos x] = -sin x

19. ∫ x^n dx = x^(n+1)/(n+1) + C

20. ∫ 1/x dx = ln|x| + C

21. ∫ e^x dx = e^x + C

22. ∫ sin x dx = -cos x + C

23. ∫ cos x dx = sin x + C

24. ∫ tan x dx = -ln|cos x| + C

25. $\int \sec^2 x \, dx = \tan x + C$

Matrices:

26. |A| (2×2) = ad - bc

27. A^(-1) = adj(A)/|A|

28. Cramer's rule: x = |A_x|/|A|

Vectors:

29. $|a| = \sqrt{(a_x^2 + a_y^2 + a_z^2)}$

30. $a \cdot b = |a||b| \cos \theta$

31. a × b magnitude = |a||b| sin θ

Statistics:

32. Mean = $\Sigma x/n$

33. $\sigma = \sqrt{[\Sigma(x\text{-mean})^2/n]}$

34. Variance = σ^2

Probability:

35. $P(E) = n(E)/n(S)$

36. $P(A \cup B) = P(A) + P(B) - P(A \cap B)$

37. $P(A|B) = P(A \cap B)/P(B)$

38. Bayes: $P(A|B) = P(B|A) \cdot P(A)/P(B)$

39. Binomial: P(X=k) = nCk p^k (1-p)^(n-k)

[Additional 11 formulas: Add specific geometry, limits, and advanced calculus formulas based on weak areas]

EXAM DAY STRATEGY (2.5 Hours = 150 Minutes)

0:00 - 0:05 (First 5 minutes):

- Read all questions & mark difficulty
- EASY (trigonometry, P&C): Mark ✓
- MODERATE: Mark ?
- HARD: Mark ✗
- Identify ~50-55 questions you can solve

0:05 - 1:45 (100 minutes):

- **Solve all EASY questions first** (Should take 60-70 mins)
- Then attempt MODERATE in order of familiarity
- Leave HARD for last 10 minutes or skip

1:45 - 2:30 (45 minutes):

- **REVIEW PHASE:** Check all attempted answers
- Catch calculation errors

- Review any skipped easy questions
- Attempt 1-2 HARD if confident
- **GOLDEN RULE:** Leave 5 minutes to mark correct answers on OMR

2:30 - 2:35 (Final 5 minutes):

- Transfer answers to OMR carefully
- No new question attempts
- Double-check marked answers

Cutoff Strategy:

- Target: 50-55 questions correct = 125-137.5 marks = **SAFE cutoff**
- Stretch: 65-70 questions = 162.5-175 marks = **Strong cutoff**
- Excellence: 85+ questions = 212.5+ marks = **Top ranks**

RESOURCES & BOOKS ALIGNMENT (Official UPSC Notification Compliant)

Tier 1: Primary Books (MUST READ):

- ✅ **NCERT Mathematics Class 11 & 12** (Official base)
- ✅ **RS Aggarwal Objective Arithmetic** (Practice questions)
- ✅ **Arihant NDA Mathematics** (NDA-specific + previous papers)

Tier 2: Supplementary (Optional but recommended):

- ✅ **RD Sharma Advanced Mathematics** (Concept depth)
- ✅ **Calculus by Gorakh Prasad** (Calculus mastery)
- ✅ **Trigonometry by SL Loney** (Trigonometry deep-dive)

Tier 3: Test Series & PYQs:

- ✅ **Previous 10 years NDA Maths PYQs** (Essential)
- ✅ **Khan Academy (Free)** - Calculus & limits videos
- ✅ **Any reputed online mock test platform** (at least 5 full mocks)

FINAL CHECKLIST BEFORE EXAM

4 Weeks Before:

- Completed all chapters
- Solved 80% of PYQs
- Created formula sheet (1 page)
- Identified weak topics (mark with red)
- Taken 2 full mock tests

2 Weeks Before:

- Re-solved weak area PYQs
- Memorized all 50+ formulas
- Taken 3 full mock tests
- Achieved 70%+ accuracy in practice

1 Week Before:

- Taken final full mock test
- Reviewed all careless mistakes
- Practiced 50 timed MCQs daily
- Rest & confidence building

Day Before Exam:

- No new study (light review only)
- Early sleep (9 PM)
- Check admit card & exam center location
- Arrange travel (reach 30 mins early)

Exam Day:

- Healthy breakfast
- Calm mind (avoid last-minute studying)

- Reach center 30 minutes early
- Carry all required documents
- Execute exam day strategy

SUCCESS INDICATORS (Track Progress)

Week-by-week Progress Tracking:

Week	Topics Completed	Accuracy Target	Mock Score	Status
1-2	Quad, Log, AP	75%+	—	🟢 On track
3-6	Algebra complete	80%+	~65 marks	🟢 On track
7-12	Trig+Geometry	85%+	~135 marks	🟢 On track
13-18	Calculus	75%+	~195 marks	🟢 On track
19-21	Vectors+Prob	70%+	~240 marks	🟢 On track
22-24	Full revision	85%+	**252.5+ marks**	🟢 READY

If behind schedule: Increase daily study hours + skip non-critical topics (conic sections, complex numbers) for cutoff safety.

FINAL MOTIVATIONAL NOTE

The NDA Mathematics Syllabus 2026 is NOT impossible. With consistent 25-week preparation:

- ✅ 44 EASY questions guaranteed = 110 marks (Minimum)
- ✅ 30 MODERATE questions achievable = 75 marks (Realistic)
- ✅ 7 HARD questions possible = 17.5 marks (Stretch goal)

Total Realistic Score: 200+ marks = 2/3 of 300 = STRONG CANDIDATE

The data shows that **Trigonometry (easy), Integration (abundant), and Algebra (fundamental)** are your three pillar chapters. Master these + secure 25% cutoff = **NDA Selection Guaranteed.**

Start Today. Execute Daily. Selection Awaits. IN

Designed By: NDA Study (https://ndastudy.com/)
Based on: UPSC Official Notification (Dec 10, 2025) + PYQ Analysis 2023-2025 + Cutoff Trends
Validity: NDA 1 2026 (April 12, 2026) + NDA 2 2026