Maths Formula Sheet

Chapter by chapter, topic by topic. Written by the PadhoNa team for quick revision.

Unlock the full PadhoNa Test Series
Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.
padhona.com/go/test-series →

CHAPTER 1

Basic Mathematics and Logarithm

Logarithm

DEFINITION

$$\log_a x = y \iff a^y = x, \qquad a > 0,\ a \neq 1,\ x > 0$$

PRODUCT AND QUOTIENT

$$\log_a(mn) = \log_a m + \log_a n, \qquad \log_a \frac{m}{n} = \log_a m - \log_a n$$

POWER

$$\log_a m^k = k \log_a m, \qquad \log_{a^k} m = \frac{1}{k} \log_a m$$

CHANGE OF BASE

$$\log_a m = \frac{\log_b m}{\log_b a}, \qquad \log_a b \cdot \log_b a = 1$$

INVERSE

$$a^{\log_a x} = x, \qquad a^{\log_b c} = c^{\log_b a}$$

INEQUALITIES

$$a > 1:\ \log_a x > \log_a y \iff x > y > 0; \qquad 0 < a < 1:\ \log_a x > \log_a y \iff 0 < x < y$$

Inequalities and modulus

MODULUS

$$|x| = \begin{cases} x, & x \geq 0 \\ -x, & x < 0 \end{cases}, \qquad \sqrt{x^2} = |x|$$

MODULUS INEQUALITIES

$$|x| < a \iff -a < x < a, \qquad |x| > a \iff x < -a \text{ or } x > a \quad (a > 0)$$

TRIANGLE INEQUALITY

$$\big||a|-|b|\big| \le |a \pm b| \le |a|+|b|$$

WAVY CURVE METHOD

$$\frac{(x-a_1)(x-a_2)\cdots}{(x-b_1)(x-b_2)\cdots} > 0$$

Mark the roots on a number line; the sign alternates between consecutive roots (a root of even power does not change the sign). Exclude the b_i.

Unlock the full PadhoNa Test Series

Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.

padhona.com/go/test-series →

Keep going with PadhoNa

Unlock the full PadhoNa Test Series

Every chapter-wise JEE Main test on the real exam screen, with full solutions and automatic analysis. Plans from ₹99 a month.

padhona.com/go/test-series →

PadhoNa Pro Maths notes

Complete, exam-focused Maths notes by the PadhoNa team: ₹99 for a year.

padhona.com/go/notes/maths →

Physics, Chemistry and Maths notes together

PadhoNa Pro · JEE: all three subjects for ₹249 a year, for JEE Main and Advanced.

padhona.com/go/pro →

© PadhoNa · padhona.com · This sheet is for personal study.