EngineeringRise

Middle term, term independent of x and coefficient problems

Formulas and units, JEE Main. Status: Reviewed on 2026-11-20.

Result	Formula	Units or note
Middle term, n even	T(n/2 + 1) = C(n, n/2) a^(n/2) b^(n/2) Valid when: n is an even positive integer	dimensionless
Middle terms, n odd	T((n+1)/2) and T((n+3)/2) Valid when: n is an odd positive integer	dimensionless
Exponent method	exponent of x in T(r+1) = m, solve r; need integer 0 <= r <= n Valid when: n a positive integer; r an integer, 0 <= r <= n	dimensionless
Term independent of x	the case m = 0 Valid when: exponent of x is zero for an integer r, 0 <= r <= n	dimensionless
Sum of coefficients	f(1) Valid when: f is a polynomial in x	dimensionless
Even-power coefficient sum	(f(1) + f(-1))/2 Valid when: f is a polynomial in x	dimensionless
Odd-power coefficient sum	(f(1) - f(-1))/2 Valid when: f is a polynomial in x	dimensionless
Trinomial trick	1 + x + x^2 = 1 + x(1 + x) Valid when: identity for any x	dimensionless

Full lesson with worked examples:
https://www.engineeringrise.in/learn/learn/jee-main/mathematics/binomial-theorem/middle-term-term-independent-of-x-and-coefficie

EngineeringRise is an unofficial study site. It is not affiliated with NTA, the IITs, BITS, VIT, SRM or any exam body.