द्विपद प्रमेय
(Binomial Theorem)

Formulas →

(i) $(a+b)^n = {}^nC_0 a^n + {}^nC_1 a^{n-1} b + {}^nC_2 a^{n-2} b^2 + {}^nC_3 a^{n-3} b^3$
$\quad + \cdots\cdots + {}^nC_n b^n$

(ii) $(a-b)^n = {}^nC_0 a^n - {}^nC_1 a^{n-1} b + {}^nC_2 a^{n-2} b^2 - {}^nC_3 a^{n-3} b^3 +$
$\quad \cdots\cdots {}^nC_n b^n$

(iii) $(a+b)^n = \sum_{r=0}^{n} {}^nC_r a^{n-r} b^r$

(iv) $(a+b)^n - (a-b)^n = 2({}^nC_1 a^{n-1} b + {}^nC_3 a^{n-3} b^3 + {}^nC_5 a^{n-5} b^5$
$\quad + \cdots)$

(v) $(a+b)^n - (a-b)^n = 2({}^nC_0 a^n + {}^nC_2 a^{n-2} b^2 + {}^nC_4 a^{n-4} b^4 +$
$\quad \cdots)$

(vi) $(1+x)^n = {}^nC_0 + {}^nC_1 x + {}^nC_2 x^2 - {}^nC_3 x^3 + \cdots\cdots$

(vii) $(1-x)^n = {}^nC_0 - {}^nC_1 x + {}^nC_2 x^2 - {}^nC_3 x^3 + \cdots\cdots$

(viii) $(a-b)^n = \sum_{r=0}^{n} (-1)^r {}^nC_r a^{n-r} b^r$

$\quad {}^nC_0 = 1$

$\quad {}^nC_n = 1$

$\quad {}^nC_1 = n$

$\quad {}^nC_2 = \dfrac{n(n-1)}{2!}$

$\quad {}^nC_3 = \dfrac{n(n-1)(n-2)}{3!}$

$\quad {}^nC_4 = \dfrac{n(n-1)(n-2)(n-3)}{4!}$