

Binomial Theorem - Set 1

1. The coefficient of x^p and x^q in the expansion of $(1+x)^{p+q}$ are
 - (a) equal
 - (b) equal with opposite signs
 - (c) reciprocals of each other
 - (d) none of these[Ans. a]
2. If the sum of the coefficients in the expansion of $(a+b)^n$ is 4096, then the greatest coefficient in the expansion is
 - (a) 1594
 - (b) 792
 - (c) 924
 - (d) 2924[Ans. c]
3. The positive integer just greater than $(1+0.00012)^{10000}$ is
 - (a) 4
 - (b) 5
 - (c) 2
 - (d) 3[Ans. d]
4. Expand by binomial theorem: $(x^2+2y)^5$ [Ans. $x^{10}+10x^8y+40x^6y^2+80x^4y^3+80x^2y^4+32y^5$]
5. Find the 10th term of $(2x^2+\frac{1}{x})^{12}$ [Ans. $\frac{1760}{x^3}$]
6. Find the 5th term from the end in $(\frac{x^3}{2}-\frac{2}{x^2})^9$ [Ans. $-252x^2$]
7. Middle term in $(3x-\frac{x^3}{6})^7$ [Ans. $-\frac{105}{8}x^{13}$ and $\frac{35}{48}x^{15}$]
8. Find the term independent of x in $(2x-\frac{1}{x})^{10}$ [Ans. 6th term]
9. Find r if coefficients of $(2r+4)$ th and $(r-2)$ th terms in $(1+x)^{18}$ are equal. [Ans. $r=6$]
10. If coefficients of 5th, 6th, 7th terms of $(1+x)^n$ are in A.P., find n . [Ans. 7 or 14]
11. Number of integral terms in $(\sqrt{3}+\sqrt[8]{5})^{256}$ [Ans. 33]
12. If T_r, T_{r+1}, T_{r+2} of $(1+x)^{14}$ are in A.P., find r . [Ans. 9]
13. Number of irrational terms in $(5^{1/6}+2^{1/8})^{100}$ [Ans. 97]
14. Larger of $99^{50}+100^{50}$ and 101^{50} [Ans. 101^{50}]
15. Find x if 3rd term of $[x+x^{\log_{10} x}]^5$ is 10^6 . [Ans. 10]
16. Coefficient of x^n in $(1+2x+3x^2+\dots)^{1/2}$ [Ans. 1]
17. If ratio of 10th and 11th terms of $(2-3x^3)^{20}$ is $\frac{45}{22}$, find x . [Ans. $-\frac{2}{3}$]