MATHS

BOOKS - JBD PUBLICATION

BINOMIAL THEOREM

Example

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1. Find the 6th term in the expansion of

$$\left(3x^2 - \frac{1}{3}x\right)^8$$

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2. Prove that: $\displaystyle\sum_{r=0}^{n} 3^r \, {}^nC_r = 4^n$.

3. Using Binomial Theorem, evaluate each of the following:$(99)^5$.

4. Find an approximation of $(0.99)^5$ using the first three terms of its expansions.

5. $(a + b)^4 - (a - b)^4$ ਪਤਾ ਕਰੋ ਅਤੇ ਇਸਦੀ ਵਰਤੋਂ ਕਰਕੇ $\left(\sqrt{3} + \sqrt{2}\right)^4 - \left(\sqrt{3} - \sqrt{2}\right)^4$ ਦਾ ਮੁੱਲ ਪਤਾ ਕਰੋ?

6. Write the general term in the expansion of:

$$\left(2x + \frac{1}{x} \right)^5.$$

7. Write the general term in the expansion of

$$\left(x^2 - yx \right)^{12}, \, x \neq 0$$

8. Find

3rd term in the expansion of $\left(3x - \dfrac{y^3}{6}\right)^4$.

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9. Find

5th term in the expansion of $\left(2x^2 - \dfrac{1}{3}x\right)^{11}$.

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10. Find the rth term from the end in the expansion of $(x + a)^n$.

11. Find the 4th term from the end in the expansion of $\left(\dfrac{4x}{5} - \dfrac{5}{2x} \right)^9$

12. Find a positive value of m for which the coefficient of x^2 in the expansion of $(1+x)^m$ is 6.

13. In the expansion of $(1+x)^n$, the coefficient of x^{p-1} and of x^{q-1} are equal. Show that p+q=n+2, $p \neq q$.

14. In the expansion of $(1 + a)^{m+n}$, prove that coefficients of a^m and a^n are equal.

15. Find the coefficient of $a^{-6}b^4$ in the expansion of $\left(\dfrac{1}{a} - \dfrac{2b}{3} \right)^{10}$.

16. The coefficients of three consecutive terms in the expansion of $(1+a)^n$ are in the ratio $1:7:42$. Find n

17. Expand each of the following expressions:

$(2x - 3)^6$.

18. Expand the following expressions, using Binomial Theorem:

$\left(1 + 2x + x^2\right)^3.$

19. Simplify $(x + 2y)^{10} + (x - 2y)^{10}.$

20. ਮੁੱਲ ਪਤਾ ਕਰੋ:-

$$\left(a^2 + \sqrt{a^2 - 1}\right)^4 + \left(a^2 - \sqrt{a^2 - 1}\right)^4$$

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21. Find the expnsion of $\left(3x^2 - 2ax + 3a^2\right)^3$ using Binomial Theorem.

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22. Find the term independent of x in the expansion of: $\left(2x + \dfrac{3}{x^2}\right)^9$.

23. Find the middle terms in the expansion of $\left(3 - \dfrac{x^3}{6}\right)^7$