Bhatnagar International School

Worksheet-Class -XI

Binomial Theorem

1. Find the approximation of $(0.98)^3$ using the first three terms of its expansion.

2. Expand $a)(x+1)^6\ b)(x-1)^6\ c)(2x-5)^4\ d)\left(\frac{2x}{3}-\frac{3}{2x}\right)^4$

3. Simplyfy $(a+b)^5+(a-b)^5$ and hence evaluate

   $a)\left(\sqrt{3}+1\right)^5+\left(\sqrt{3}-1\right)^5\ b)\left(5\sqrt{3}+2\right)^5+\left(5\sqrt{3}-2\right)^5$

4. Find the coefficient of (i) x^{-3} in $\left(2x^2-\frac{1}{x}\right)^{12}$ (ii) x^5 in $(x+3)^8$ (iii) $x^7 in\left(x\ -\frac{1}{x}\right)^{13}$

5. Find the 11th term in the expanion of $\left(2x^2-\frac{1}{x}\right)^{12}$

6. Find the 15th term in the expanion of $\left(3-\frac{3}{x^2}\right)^{18}$.

7. What is the term free from x in the expanion of $a)\left(x^2+\frac{3}{x^2}\right)^{15}\ b)\left(\frac{1}{2}x^{\frac{1}{3}}+\frac{1}{x^{\frac{1}{5}}}\right)^8$ Ans.

   $a)5005(3)^5\ b)7$

8. Show that 6^n-5n-1 is divisible by 25,whenevern is a positive integer.

9. The 2nd,3rd and 4th terms in the expansion of $(a+b)^n$ are 240, 720 and 1080 respectively. Find the values of

   a, b and n. Ans. A=2,b=3,n=5

10. Find the greatest term in the expansion of $(1+x)^{10}$,x=2/3.Ans. $T_5=210\left(\frac{2}{3}\right)^4$

11. Write the 5th term from the end in the expansion of $\left(\frac{x^3}{2}-\frac{2}{x^2}\right)^{12}$ Ans.7920 x^{-4}