

DPP

DAILY PRACTICE PROBLEMS

Class : XIth

Date :

Subject : Maths

DPP No. :1

Topic :- Binomial Theorem

- If $(1+x)^{15} = C_0 + C_1x + C_2x^2 + \dots + C_{15}x^{15}$, then $C_2 + 2C_3 + 3C_4 + \dots + 14C_{15}$ is equal to
 a) $14 \cdot 2^{14}$ b) $13 \cdot 2^{14} + 1$ c) $13 \cdot 2^{14} - 1$ d) None of these
- If the coefficients of second, third and fourth terms in the expansion of $(1+x)^{2n}$ are in A.P., then
 a) $2n^2 + 9n + 7 = 0$ b) $2n^2 - 9n + 7 = 0$ c) $2n^2 - 9n - 7 = 0$ d) None of these
- If $|x| < \frac{1}{2}$, then the coefficient of x^r in the expansion of $\frac{1+2x}{(1-2x)^2}$ is
 a) $r2^r$ b) $(2r-1)2^r$ c) $r2^{2r+1}$ d) $(2r+1)2^r$
- $\binom{30}{0}\binom{30}{10} - \binom{30}{1}\binom{30}{11} + \dots + \binom{30}{20}\binom{30}{30}$ is equal to
 a) ${}^{30}C_{11}$ b) ${}^{60}C_{10}$ c) ${}^{30}C_{10}$ d) ${}^{65}C_{55}$
- If $(1-x+x^2)^n = a_0 + a_1x + a_2x^2 + \dots + a_{2n}x^{2n}$, then $a_0 + a_2 + a_4 + \dots + a_{2n}$ is equal to
 a) $\frac{3^n + 1}{2}$ b) $\frac{3^n - 1}{2}$ c) $\frac{3^{n-1} + 1}{2}$ d) $\frac{3^{n-1} - 1}{2}$
- If $C_0, C_1, C_2, \dots, C_n$ denote the binomial coefficient in the expansion of $(1+x)^n$, then $C_0 \frac{C_1}{2} + \frac{C_2}{3} + \dots + \frac{C_n}{n+1}$ is equal to
 a) $\frac{2^{n+1} - 1}{n+1}$ b) $\frac{2^n - 1}{n}$ c) $\frac{2^{n-1} - 1}{n-1}$ d) $\frac{2^{n+1} - 1}{n+2}$
- If the ratio of the 7th term from the beginning to the seventh term from the end in the expansion of $(\sqrt[3]{2} + \frac{1}{\sqrt[3]{3}})^x$ is $\frac{1}{6}$ then x , is
 a) 9 b) 6, 15 c) 12, 9 d) None of these
- If in the expansion of $(x^3 - \frac{1}{x^2})^n$, $n \in N$, sum of the coefficients of x^5 and x^{10} is zero, then $n =$
 a) 5 b) 10 c) 15 d) 20
- The range of the values of the term independent of x in the expansion of $(x \sin^{-1} \alpha + \frac{\cos^{-1} \alpha}{x})^{10}$, $\alpha \in [-1, 1]$ is
 a) $\left[\frac{{}^{10}C_5 \cdot \pi^{10}}{2^5}, -\frac{{}^{10}C_5 \pi^{10}}{2^{20}} \right]$ b) $\left[-\frac{{}^{10}C_5 \cdot \pi^{10}}{2^5}, \frac{{}^{10}C_5 \cdot \pi^{10}}{2^{20}} \right]$
 c) $\left[\frac{{}^{10}C_5 \cdot \pi^5}{2^5}, \frac{{}^{10}C_5 \cdot \pi^5}{2^{20}} \right]$ d) $\left[-\frac{{}^{10}C_5 \cdot \pi^5}{2^5}, \frac{{}^{10}C_5 \cdot \pi^5}{2^{20}} \right]$
- $\binom{30}{0}\binom{30}{10} - \binom{30}{1}\binom{30}{11} + \dots + \binom{30}{20}\binom{30}{30}$ is equal to
 a) ${}^{30}C_{11}$ b) ${}^{60}C_{10}$ c) ${}^{30}C_{10}$ d) ${}^{65}C_{55}$
- The r th terms in the expansion of $(a+2n)^n$ is
 a) $\frac{n(n+1) \dots (n-r+1)}{r!} a^{n-r+1} (2x)^r$ b) $\frac{n(n-1) \dots (n-r+2)}{(r-1)!} a^{n-r+1} (2x)^{r-1}$
 c) $\frac{n(n+1) \dots (n-r)}{r+1} a^{n-r} (x)^r$ d) None of the above
- The coefficient of t^{24} in the expansion of $(1+t^2)^{12}(1+t^{12})(1+t^{24})$ is
 a) ${}^{12}C_6 + 2$ b) ${}^{12}C_5$ c) ${}^{12}C_6$ d) ${}^{12}C_7$



13. The coefficient of x^n in the expansion of $\frac{(1+x)^2}{(1-x)^3}$, is
a) $n^2 + 2n + 1$ b) $2n^2 + n + 1$ c) $2n^2 + 2n + 1$ d) $n^2 + 2n + 2$
14. The sum of the coefficient in the expansion of $(1 + x - 3x^2)^{3148}$ is
a) 8 b) 7 c) 1 d) -1
15. If C_r stands for ${}^n C_r$, then the sum of first $(n + 1)$ terms of the series $a C_0 - (a + d)C_1 + (a + 2d)C_2 - (a + 3d)C_3 + \dots$, is
a) $\frac{a}{2^n}$ b) na c) 0 d) None of these
16. The value of $\frac{18^3 + 7^3 + 3 \cdot 18 \cdot 7 \cdot 25}{3^6 + 6 \cdot 243 \cdot 2 + 15 \cdot 181 \cdot 4 + 20 \cdot 27 \cdot 8 + 15 \cdot 9 \cdot 16 + 6 \cdot 3 \cdot 32 + 64}$, is
a) 10 b) 1 c) 2 d) 20
17. The coefficient of x^5 in the expansion of $(1 + x^2)^5(1 + x)^4$, is
a) 30 b) 60 c) 40 d) None of these
18. If $n = 5$, then $({}^n C_0)^2 + ({}^n C_1)^2 + ({}^n C_2)^2 + \dots + ({}^n C_5)^2$ is equal to
a) 250 b) 254 c) 245 d) 252
19. The coefficient of x^{50} in the expression $(1 + x)^{1000} + 2x(1 + x)^{999} + 3x^2(1 + x)^{998} + \dots + 1001x^{1000}$ is
a) ${}^{1000} C_{50}$ b) ${}^{1001} C_{50}$ c) ${}^{1002} C_{50}$ d) ${}^{1000} C_{51}$
20. For $|x| < 1$, the constant term in the expansion of $\frac{1}{(x-1)^2(x-2)}$ is
a) 2 b) 1 c) 0 d) $-\frac{1}{2}$

