

Binomial Theorem - Class XI

Related Questions with Solutions

Questions

Question: 01

In questions below, If $C_0, C_1, C_2, \dots, C_n$ are the combinatorial coefficients in the expansion of $(1+x)^n$, $n \in \mathbb{N}$, then $C_1 + 2C_2 + 3C_3 + \dots + n \cdot C_n =$

- A. $n \cdot 2^n$
- B. $n \cdot 2^{n-1}$
- C. $(n+1)2^n$
- D. $n2^{n+1}$

Solutions

Solution: 01

$$\begin{aligned} & \sum_{r=1}^n r^n C_r \\ &= n \sum_{r=1}^n {}^{n-1}C_{r-1} \\ &= n [{}^{n-1}C_0 + {}^{n-1}C_1 + \dots + {}^{n-1}C_{n-1}] \\ &= n \cdot 2^{n-1} \end{aligned}$$

Correct Options

Answer:01

Correct Options: B