



Mathematical Induction and Binomial Theorem

Q.No.1:

The term independent of x in expansion of $\left(\frac{x+1}{x^{\frac{2}{3}}-x^{\frac{1}{3}}+1} - \frac{x-1}{x-x^{\frac{1}{2}}}\right)^{10}$ is :

JEE 2013

- A. 4
- B. 120
- C. 210
- D. 310

Q.No.2: The sum of coefficient of integral power of x in the binomial expansion of $(1 - 2\sqrt{x})^{50}$ is : **JEE 2015**

- A. $\frac{1}{2} (3^{50} + 1)$
- B. $\frac{1}{2} (3^{50})$
- C. $\frac{1}{2} (3^{50} - 1)$
- D. $\frac{1}{2} (2^{50} + 1)$

Q.No.3: If the number of terms in the expansion of $\left(1 - \frac{2}{x} + \frac{4}{x^2}\right)^n$, $x \neq 0$, is 28, then the sum of the coefficients of the terms in this expansion, is : **JEE 2016**

- A. 2187
- B. 243
- C. 729
- D. 64

Q.No.4: The sum of the co-efficients of all odd degree terms in the expansion of $(x + \sqrt{x^3 - 1})^5 + (x - \sqrt{x^3 - 1})^5$, $(x > 1)$ is : **JEE 2018**

- A. 1
- B. 2
- C. -1
- D. 0

Q.No.5: If the fractional part of the number $\frac{2^{403}}{15}$ is $\frac{k}{15}$, then k is equal to: **JEE 2019**

- A. 6
- B. 8
- C. 4
- D. 14

Q.No.6: The coefficient of t^4 in the expansion of $\left(\frac{1-t^6}{1-t}\right)^3$ is: **JEE 2019**

- A. 14
- B. 15
- C. 10
- D. 12

Q.No.7: If the third term in the binomial expansion of $(1 + x^{\log_2 x})^5$ equals 2560, then a possible value of x is: **JEE 2019**

- A. $\frac{1}{4}$
- B. $4\sqrt{2}$
- C. $\frac{1}{8}$
- D. $2\sqrt{2}$

Q.No.8: The positive value of λ for which the co-efficient of x^2 in the expression $x^2\left(\sqrt{x} + \frac{\lambda}{x^2}\right)^{10}$ is 720, is : **JEE 2019**

- A. 4
- B. $2\sqrt{2}$
- C. $\sqrt{5}$
- D. 3

Q.No.9: The sum of the real values of x for which the middle term in the binomial expansion of $\left(\frac{x^3}{3} + \frac{3}{x}\right)^8$ equals 5670 is: **JEE 2019**

- A. 0
- B. 6
- C. 4
- D. 8

Q.No.10: A ratio of the 5th term from the beginning to the 5th term from the end in the binomial expansion of $\left(2^{\frac{1}{3}} + \frac{1}{2(3)^{\frac{1}{3}}}\right)^{10}$ is: **JEE 2019**

- A. $1 : 2(6)^{\frac{1}{3}}$
- B. $1 : 4(16)^{\frac{1}{3}}$
- C. $4(36)^{\frac{1}{3}} : 1$
- D. $2(36)^{\frac{1}{3}} : 1$