JEE Mains Super-40 Revision Series

BINOMIAL THEOREM

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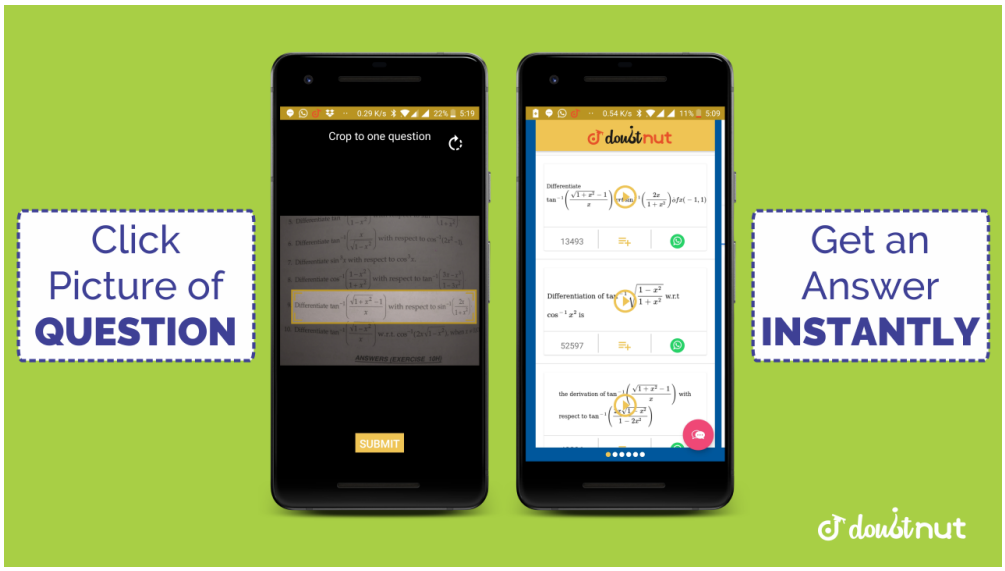
Ques No.	Question
1 - 11598	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** The term independent of x in expansion of $\left(\frac{x+1}{x^{\frac{2}{3}}-x^{\frac{1}{3}}+1}-\frac{x-1}{x-x^{\frac{1}{2}}}\right)$ is (1) 120 (2) 210 (3) 310 (4) 4 Watch Free Video Solution on Doubtnut
2 - 11636	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** If the coefficients of x^3 and x^4 in the expansion of $(1+ax+bx^2)(1-2x)^{18}$ in powers of x are both zero, then (a, b) is equal to (1) $\left(16, \frac{251}{3}\right)$ (3) $\left(14, \frac{251}{3}\right)$ (2) $\left(14, \frac{272}{3}\right)$ (4) $\left(16, \frac{272}{3}\right)$ Watch Free Video Solution on Doubtnut
3 - 11644	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** The sum of coefficients of integral powers of x in the binomial expansion of $\left(1-2\sqrt{x}\right)^{50}$ is: (1) $\frac{1}{2}\left(3^{50}+1\right)$ (2) $\frac{1}{2}\left(3^{50}\right)$ (3) $\frac{1}{2}\left(3^{50}-1\right)$ (4) $\frac{1}{2}\left(2^{50}+1\right)$ Watch Free Video Solution on Doubtnut

4 - 11684	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** 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 all the terms in this expansion, is : (1) 64 (2) 2187 (3) 243 (4) 729 Watch Free Video Solution on Doubtnut
5 - 31984	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** If $f(x)=x^n, f(1)+\frac{f^1(1)}{1}+\frac{f^2(1)}{2!}+\frac{f^n(1)}{n!}, where f^r(x)$ denotes the rth order derivative of $f(x)$ with respect to $x,$ is n b. 2^n c. 2^{n-1} d. none of these Watch Free Video Solution on Doubtnut
6 - 31985	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** The fractional part of $\frac{2^{4n}}{15}$ is $(n \in N)$ (a) $\frac{1}{15}$ (b) $\frac{2}{15}$ (c) $\frac{4}{15}$ (d) non of these Watch Free Video Solution on Doubtnut
7 - 31990	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** If the sum of the coefficients in the expansion of $(a+b)^n$ is 4096, then the greatest coefficient in the expansion is 924 b. 792 c. 1594 d. none of these Watch Free Video Solution on Doubtnut
doubtnut पढ़ना हुआ आसान	
8 - 31992	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM** The sum of the coefficients of even power of x in the expansion of $\left(1+x+x^2+x^3\right)^5$ is 256 b. 128 c. 512 d. 64 Watch Free Video Solution on Doubtnut
9 - 32014	**JEE Mains Super-40 Revision Series - BINOMIAL THEOREM**

If the last tem in the binomial expansion of $\left(2^{\frac{1}{3}}-\frac{1}{\sqrt{2}}\right)^{n} is\left(\frac{1}{3^{\frac{5}{3}}}\right)^{\log_{3} 8}$, then 5th term from the beginning is 210 b. 420 c. 105 d. none of these

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10 - 32018

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The total number of terms which are dependent on the value of x in the expansion of $\left(x^{2}-2+\frac{1}{x^{2}}\right)^{n}$ is equal to $2n+1$ b. $2n$ c. n d. $n+1$

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11 - 32020

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If n is an integer between 0 and 21, then the minimum value of $n!(21-n)!$ is attained for $n=$ 1 b. 10 c. 12 d. 20

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12 - 32039

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If x^{m} occurs in the expansion $\left(x+1/x^{2}\right)^{n}$, then the coefficient of x^{m} is $\frac{(2n)!}{(m)!(2n-m)!}$ b. $\frac{(2n)!3!3!}{(2n-m)!}$ c. $\frac{(2n)!}{\left(\frac{2n-m}{3}\right)!\left(\frac{4n+m}{3}\right)!}$ d. none of these

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13 - 32040

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If the coefficients of 5th, 6th , and 7th terms in the expansion of $(1+x)^{n}$ are in A.P., then $n=$ a. 7 only b. 14 only c. 7 or 14 d. none of these

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14 - 32042

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In the expansion of $\left(x^3 - \frac{1}{x^2}\right)^n, n \in N$, if the sum of the coefficients of $x^5 and x^{10}$is 0 , then n is a. 25 b. 20 c. 15 d. none of these

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15 - 32044

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In the expansion of $\left(1 + 3x + 2x^2\right)^6$, the coefficient of x^{11} is a. 144 b. 288 c. 216 d. 576

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16 - 32051

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Coefficient of x^{11} in the expansion of $\left(1 + x^2\right)^4 \left(1 + x^3\right)^7 \left(1 + x^4\right)^{12}$ is 1051 b. 1106 c. 1113 d. 1120

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17 - 32057

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The term independent of a in the expansion of $\left(1 + \sqrt{a} + \frac{1}{\sqrt{a} - 1}\right)^{-30}$ is (a) $30C_{20}$ (b) 0 (c) $30C_{10}$ (d) non of these

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18 - 32058

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The coefficient of x^{53} in the expansion $\sum_{m=0}^{100}$ ˆ $(100)C_m(x - 3)^{100 - m}2^m$ is ˆ $100C_{47}$ b. ˆ $100C_{53}$ c. $-^{100}C_{53}$ d. none of these

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19 - 32061

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If coefficient of $a^2b^3c^4 \in (a+b+c)^m$ (where $n \in N$) is $L(L \neq 0)$, then in same expansion coefficient of $a^4b^4c^1$ will be (a) L (b) $\frac{L}{3}$ (c) $\frac{mL}{4}$ (d) $\frac{L}{2}$

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20 - 32064

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The coefficient of $x^r[0 \leq r \leq (n-1)]$ in lthe expansion of $(x+3)^{n-1}+(x+3)^{n-2}(x+2)+(x+3)^{n-3}(x+2)^2+\ +(x+2)^{n-1}$ is ^ $nC_r(3^r-2^n)$ b. ^ $nC_r\left(3^{n-r}-2^{n-r}\right)$ c. ^ $nC_r\left(3^r+2^{n-r}\right)$ d. none of these

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21 - 32066

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In the expansion of $\left(5^{1/2}+7^{1/8}\right)^{1024}$, the number of integral terms is 128 b. 129 c. 130 d. 131

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22 - 32080

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If $\sum_{r=0}^{10}\left(\frac{r+2}{r+1}\right) \wedge nC_r = \frac{2^8-1}{6}$, then n is 8 b. 4 c. 6 d. 5

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23 - 32084

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If $\frac{x^2+x+1}{1-x} = a_0+a_1x+a_2x^2+, then \sum_{r=1}^{50} a_r$ is equal to 148 b. 146 c. 149 d. none of these

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24 - 32085

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p is a prime number and `n

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25 - 32089

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The value of $\sum_{r=0}^{20} r(20-r)(\hat{}\ (20)C_r)^2$ is equal to $400^{39}C_{20}$ b. $400^{40}C_{19}$ c. $400^{39}C_{19}$ d. $400^{38}C_{20}$

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26 - 32090

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The coefficient of x^{10} in the expansion of $\left(1+x^2-x^3\right)^8$ is 476 b. 496 c. 506 d. 528

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27 - 32091

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If the term independent of x in the $\left(\sqrt{x}-\frac{k}{x^2}\right)^{10}$ is 405, then k equals $2,\ -2$ b. $3,\ -3$ c. $4,\ -4$ d. $1,\ -1$

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28 - 32094

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The coefficient of $a^8b^4c^9d^9$ in $(abc+abd+acd+bcd)^{10}$ is $10!$ b. $\frac{10!}{8!4!9!9!}$ c. 2520 d. none of these

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29 - 32095

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

If the coefficient of $x^7 \in \left[ax^2 - \left(\frac{1}{bx^2}\right)\right]^{11}$ equal the coefficient of x^{-7} in satisfy the $\left[ax - \left(\frac{1}{bx^2}\right)\right]^{11}, thenaandb$ satisfy the relation $a+b=1$ b. $a-b=1$ c. $b=1$ d. $\frac{a}{b}=1$

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30 - 32097

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The coefficient of x^n in the expansion of $(1-x)(1-x)^n$ is $n-1$ b. $(-1)^n(1-n)$ c. $(-1)^{n-1}(n-1)^2$ d. $(-1)^{n-1}n$

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31 - 32112

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If $|x|<1,$ then the coefficient of x^n in expansion of $\left(1+x+x^2+x^3+\right)^2$ is n b. $n-1$ c. $n+2$ d. $n+1$

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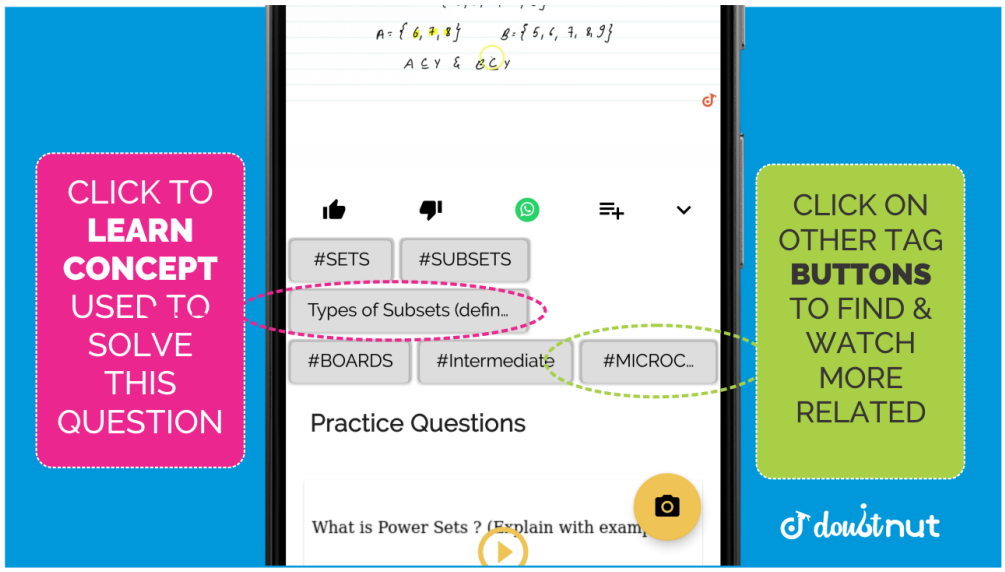

32 - 32114

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If x is so small that x^3 and higher powers of x may be neglectd, then $\frac{(1+x)^{3/2}-\left(1+\frac{1}{2}x\right)^3}{(1-x)^{1/2}}$ may be approximated as $3x+\frac{3}{8}x^2$ b. $1-\frac{3}{8}x^2$ c. $\frac{x}{2}-\frac{3}{\times^2}$ d. $-\frac{3}{8}x^2$

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33 - 32119

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The sum of rational term in $\left(\sqrt{2}+33+56\right)^{10}$ is equal to 12632 b. 1260 c. 126 d. none of these

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34 - 32140

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$\sum_{k=1}^{\infty} k\left(1-\frac{1}{n}\right)^{k-1} =$ a.$n(n-1)$ b. $n(n+1)$ c. n^2 d. $(n+1)^2$

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35 - 32141

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The coefficient of x^4 in the expansion of $\left\{\sqrt{1+x^2}-x\right\}^{-1}$ in ascending powers of x, when $|x|<1, is\ 0$ b. $\frac{1}{2}$ c. $-\frac{1}{2}$ d. $-\frac{1}{8}$

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36 - 32143

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The value of $\sum_{r=1}^{15} \frac{r2^r}{(r+2)!}$ is $\frac{(17)!-2^{16}}{(17)!}$ b. $\frac{(18)!-2^{17}}{(18)!}$ c. $\frac{(16)!-2^{15}}{(16)!}$ d. $\frac{(15)!-2^{14}}{(15)!}$

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37 - 32161

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If ^ $C0,^C 1,^C 2,^C n$ are the binomial coefficient, then $2 \times C_1 + 2^3 \times C^3 + 2^5 \times C_5 +$ equals $\frac{3^n+(-1)^n}{2}$ b. $\frac{3^n-(-1)^n}{2}$ c. $\frac{3^n+1}{2}$ d. $\frac{3^n-1}{2}$

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38 - 32164

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If $\left(3+x^{2008}+x^{2009}\right)^{2010} = a_0 + a_1x + a_2x^2 + \ + a_nx^n,$ then the value of $a_0 - \frac{1}{2}a_1 - \frac{1}{2}a_2 + a_3 - \frac{1}{2}a_4 - \frac{1}{2}a_5 + a_6 -$ is 3^{2010} b. 1 c. 2^{2010} d. none of these

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39 - 32167

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If $(1+x)^n = C_0 + C_1x + C_2x^2 + \ + C_nx^n, then C_0C_2 + C_1C_3 + C_2C_4 + \ + C_{n-2}C_n = \frac{(2n)!}{(n!)^2}$ b. $\frac{(2n)!}{(n-1)!(n+1)!}$ c. $\frac{(2n)!}{(n-2)!(n+2)!}$ d. none of these

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40 - 32174

JEE Mains Super-40 Revision Series - BINOMIAL THEOREM

The number of real negative terms in the binomial expansion of $(1+ix)^{4n-2}, n \in N, x > 0$ is a.n b. $n+1$ c. $n-1$ d. $2n$

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