



MATHS

BOOKS - JBD PUBLICATION

SEQUENCES AND SERIES





Answer:

2. Which term of the sequences $\sqrt{3}$, 3, $3\sqrt{3}$,.....is 729?

A. 10th

B. 8th

C. 14th

D. 12th

Answer:

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3. If a,b,c and in A.P, then x^a , x^b , x^c are in:

A. A.P

B. G.P

C. H.P.

D. None of these

Answer:

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4. The sum of the first n odd number is :

A. 2n

 $\mathsf{B.}\,n^2$

C.
$$rac{n(n+1)}{2}$$

D. $rac{n(n+1)}{2}$

Answer:

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5. The sum of first 30 natural numbers is:

A. 465

B. 900

C. 930

D. None of these

Answer:

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6. If $\left(p+q
ight)^{th}$ term of an A.P. is m and (p-q)th term is n, then the pth

term is:

A.
$$rac{1}{2}(m-n)$$

B. mn

C. \sqrt{mn} D. $rac{1}{2}(m+n)$

Answer:



7. If 100 times the 100 th term of an A.P with non- zero common difference equals the 50 times its 50th term, then the 150th term of this A.P is

- a. 150 times its 50th term
- **b**. 150
- **c**. 0
- $\mathsf{d.}-150$
 - A. 0
 - B. 150
 - C. -150
 - D. None of these

Answer:

8. If the A.M of two numbers is 9 and G.M is 4, then these numbers are roots of the equation:

A.
$$x^2 - 18x - 16 = 0$$

B.
$$x^2 - 18x + 16 = 0$$

$$\mathsf{C.}\,x^2 - 16x + 18 = 0$$

D.
$$x^2 + 16x - 18 = 0$$

Answer:

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9. If second term of a GP. is 2 and the sum of its infinte terms is 8, then

its first term is

A. 4		
В4		
C. 2		
D2		

Answer:

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10. If the pth,term of an A.P. is q and the qth is p, then the rth term is

A. P+q+r

B. p-q+r

C. p-q+r

D. p+q-r

Answer:





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13. If 1+2+3+.....+n=45, then $1^3 + 2^3 + 3^3 + \dots + n^3$ is:

A. $(45)^2$

 $B.(45)^3$

 $C.(45)^4$

D. None of these

Answer:

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14. If g_1 , g_2 are two G.M's between two numbers a and b, then $\frac{g_1^2}{g_2} + \frac{g_2^2}{g_1}$ is equal to: A. ab B. a+b

D. None of these

Answer:



15. If the sum of n terms of an A.P. is given by $\delta_n=3n+2n^2,$ then the common difference of an A.P. is

A. 4

B. 3

C. 2

D. None of these

Answer:

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16. Which term of the sequences 8-6i, 7-4i, 6-2i,is a real number?

A. 7th

B. 6th

C. 5th

D. 4th

Answer:

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17. If the sum of first n even natural numbers is equal to k times the sum of first n odd natural numbers, then k is equal to:

A.
$$\frac{n+1}{2}$$

B. $\frac{n+1}{2n}$
C. $\frac{1}{n}$

D. None of these

Answer:



18. If
$$\sum n=210$$
, then $\sum n^2$ is equal to:

A. 2870

B. 2670

C. 2570

D. None of these

Answer:



19. If 7th and 13th terms of an A.P. be 34 and 64 respectively, then its 18th term is:

A. 87

B. 88

C. 89

D. None of these

Answer:



20. The nth term of a G.P. is 128 and the sum of its n terms is 225. If its

common ratio is 2, then its first term is:

A. 1

B. 2

C. 3

D. None of these

Answer:

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21. The value of
$$\sum_{1}^{5}{(n)}$$
 is:

A. 15

B. 20

C. 25

D. None of these

Answer:



22. Angles A,B and C of a ΔABC are in AP. $If rac{b}{c} = rac{\sqrt{3}}{\sqrt{2}}, ext{ then } ar{A} ext{ is }$

equal to

A. 75°

 $\mathrm{B.\,60}^{\,\circ}$

C. 45°

D. None of these

Answer:

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23. Two positive numbers whose difference is 12 and whose A.M. exceeds the G.M by 2 are:

A. 16, 4

B. 12, 3

C. 9,6

D. None of these

Answer:

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24. The product $(32), (32)^{1/6}(32)^{1/36}.... \infty$ is equal to:

A. 8

B. 32

C. 64

D. None of these

Answer:

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25. The G.M. between -2i and 8i is:

A. ± 2

 ${\rm B.}\pm4$

 $\mathsf{C.}\pm 4i$

D. None of these

Answer:

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26. If the ratio of A.M and G.M between two numbers is 5:3, then the

ratio of two numbers is:

A. 3:1

B.1:3

C.1:9

D. None of these

Answer:

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27. If a, b,c are in G.P, then log a, log b, log c are:

A. A.P.

B. G.P.

C. not in A.P

D. None of these

Answer:



28. Find the sum to n terms of the series $1^2 + 3^2 + 5^2 + \dots$ upton terms .

A.
$$rac{n}{3} ig(4n^2+1ig)$$

B. $rac{n}{3} ig(4n^2-5ig)$
C. $rac{n}{3} ig(4n^2-1ig)$

D. None of these

Answer:

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29. The sum of the series is
$$1 + \frac{4}{5} + \frac{7}{5^2} + \frac{10}{5^3} + \dots \dots \infty$$
 is:

A.
$$\frac{23}{16}$$

B. $\frac{35}{16}$

C.
$$\frac{1}{35}$$

D. None of these

Answer:



30. The sum of the series $1 + 3x + 6x^2 + 10x^3 + \ldots \infty$ is:

A.
$$rac{1}{(x-1)^3}$$

B. $rac{1}{(1-x)^2}$
C. $rac{1}{(x-3)^2}$

D. None of these

Answer:



2. Find the indicated terms of the sequences given below whose nth

terms are:
$$a_n=rac{n(n-2)}{n+3},a_{20}$$

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3. Find the indicated terms of the sequences given below whose nth

terms are: $a_n={(\,-1)}^{n-1}n^3, a_9$



4. First term of a sequence is 1 and the (n + 1)th term is obtained by adding (n + 1) to the nth term for all natural numbers n, the 6th term of the sequence is



5. Show that the sequence whose n^{th} term is $2n^2 + n + 1$ is not an A.P.

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6. Determine k so that k+2, 4k-6 and 3k-2 are three consecutive terms of

an A.P.

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7. Show that the sum of $\left(m+n
ight)^{th}$ and $\left(m-n
ight)^{th}$ terms of an A.P. is

equal to twice the m^{th} term.



8. Find the sum of all two digit numbers which when divided by 4, yields 1 as remainder.

9. If the lengths of the sides of a right angled triangle are in A.P., then

show that their ratio is 3:4:5.

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10. Which term of the following sequence:- $\sqrt{3}$, 3, $3\sqrt{3}$,....is 729?

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11. Find the 10th term of a G.P. whose 8th term is 192 and the common

ratio is 2.



12. The 5th, 8th and 11th terms of a G.P. are p, q and x, respectively. Show that $q^2 = ps$.



13. If the 4th, 10th and 16th terms of a G.P. are x, y and z, respectively.

Prove that x, y, z are in G.P.

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14. If A.M. and G.M of roots of a quadratic equations are 6 and 5 respectively, then obtain the quadratic equation.



15. Prove that

$$rac{1}{3^2} imes rac{1}{3^4} imes rac{1}{3^8}..... = 3$$



18. A man starts repaying a loan as first instalment of Rs. 100. If he increases the instalment by Rs 5 every month, what amount he will pay in the 30th instalment?



19. Find the sum of first n terms of an A.P. whose nth term is 3n+1.

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20. If 3rd term of a G.P. is 324 and 7th term is 64, then find the 10th

term.

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21. How many terms of G.P. 3, 3^2 , 3^3 , ... are needed to give the sum 120?

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22. If m times the mth term is equal to n times the nth term of an A.P.

prove that(m+n)th term of an A.P. is zero.



23. If the pth, qth and rth terms of an A.P. be x,y,z repsectively, then show that : x(q-r) + y(r-p) + z(p-q) = 0



24. In an A.P., the first term is 2 and the sum of the first five terms is one-fourth of the next five terms. Show that 20th term is -112.

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25. Find the sum of all natural numbers lying between 100 and 1000,

which are multiples of 5.



26. Let the sum of n, 2n, 3n terms of an A.P. be S_1 , S_2 and S_3 , respectively, show that $S_3=3(S_2-S_1)$

27. The sums of n terms of two arithmetic progressions are in the ratio

5n + 4:9n + 6. Find the ratio of their 18th terms.

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28. Prove that the sum of n arithmetic means between two numbers is

n times the single A.M. between them.

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29. The digits of a positive integer having three digits are in AP and their sum is 15. The number obtained by reversing the digits is 594 less then the original number. Find the number.

30. If the first and the nth terms of a GP are a and b respectively and if

P is the product of the first n terms, then P^2 is equal to



33. The A.M. between two positive numbers is 34 and their G.M. is 16.

find the numbers.

34. If a be the A.M. and x, y be the two G.M's between b and c, show that

 $x^3 + y^3 = 2abc.$



35. The sum of three numbers which are consecutive terms of an A.P. is 21. If the second number is reduced by 1 and the third is increased by 1, we obtain three consecutive terms of a G.P. Find the numbers.

36. If a,b,c are in A.P. and x,y,z are in G.P., then show that x^{b-c} . y(c-a). z(a-b) = 1.

37. Find a G.P. for which sum of the first two terms is -4 and the fifth

term is 4 times the third term.

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38. The sum of an inifinite G.P. is 8. If the second term is 2, then find the		
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39. Find the sum to n terms of the series $3 \times 8 + 6 \times 11 + 9 \times 14 + \dots$

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41. The difference between any two consecutive interior angles of a polygon is 5° . If the smallest angle is 120° , find the number of the sides of the polygon.

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42. A manufacturer reckons that the value of a machine, which costs him Rs. 15625, will depreciate each year by 20%. Find the estimated value at the end of 5 years.

43. If A.M and G.M of two positive numbers are 13 and 12 respectively. Find the numbers.

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44. Find the sum of integers from 1 to 100 that are divisible by 2 or 5. Watch Video Solution
45. The ratio of the sums of m and n terms of an A.P. is $m^2 : n^2$. Show that the ratio of m^{th} and n^{th} term is $(2m - 1) : (2n - 1)$. Watch Video Solution
46. If a^2, b^2, c^2 are in A.P. Prove that $\frac{a}{b+c}, \frac{b}{c+a}, \frac{c}{a+b}$ are also in

47. If S_1, S_2, S_3 be respectively the sum of n, 2n and 3n terms of a GP,

then $\displaystyle rac{S_1(S_3-S_2)}{\left(S_2-S_1
ight)^2}$ is equal to

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48. Let S be the sum, P the product and R the sum of reciprocals of n

terms in a G.P. Prove that $P^2 R^n = S^n$.

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terms in a G.P. Prove that $P^2 R^n = S^n$.

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50. The sum of two numbers is 6 times their geometric mean, show that numbers are in the ratio $(3 + 2\sqrt{2}) : (3 - 2\sqrt{2})$.



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52. The sum of three numbers in G.P. is 56. If we subtract 1, 7, 21 from these numbers in that order, we obtain an arithmetic progression. Find the numbers.



53. If a,b,c are in G.P. and x,y are the arithmetic means of a,b and b,c

respectively. Then prove that

$$rac{a}{x}+rac{c}{y}=2$$
 and $rac{1}{x}+rac{1}{y}=rac{2}{b}.$

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54. Find the sum of first n terms of the series.

 $3 + 7 + 13 + 21 + 31 + \dots$

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