

Tarun Classes of Mathematics

IIT-JEE Mains | CBSE | PU-CET | NDA

Talwara Township, Hoshiarpur | +91 9463672753 | tarunclasses.in

Sequence And Series

Subjects : Maths

Practice Questions and PYQs

Maths - Section A (MCQ.)

- The sum of the first n terms of an AP is $3n^2 + 5n$. If the m^{th} term of the AP is 68, then what is the value of m ?
A) 9 B) 10 C) 11 D) 12
- If the 5th term of an AP is $\frac{1}{10}$ and its 10 th term is $\frac{1}{5}$, then what is the sum of first 50 terms?
A) 25 B) 25.5 C) 26 D) 26.5
- If the sum of the first 9 terms of an AP is equal to sum of the first 11 terms, then what is the sum of the first 20 terms?
A) 20 B) 10 C) 2 D) 0
- What is the sum of the series $0.5 + 0.55 + 0.555 + \dots$ to n terms?
A) $\frac{5}{9} \left[n - \frac{2}{9} \left(1 - \frac{1}{10^n} \right) \right]$ B) $\frac{1}{9} \left[5 - \frac{2}{9} \left(1 - \frac{1}{10^n} \right) \right]$
C) $\frac{1}{9} \left[n - \frac{5}{9} \left(1 - \frac{1}{10^n} \right) \right]$ D) $\frac{5}{9} \left[n - \frac{1}{9} \left(1 - \frac{1}{10^n} \right) \right]$
- What is the sum of n terms of the series $\sqrt{2} + \sqrt{8} + \sqrt{18} + \sqrt{32} + \dots$?
A) $\frac{n(n-1)}{\sqrt{2}}$ B) $\sqrt{2n}(n+1)$ C) $\frac{n(n+1)}{\sqrt{2}}$ D) $\frac{n(n-1)}{2}$
- If $\log_{10} 2$, $\log_{10} (2^x - 1)$ and $\log_{10} (2^x + 3)$ are three consecutive terms of an A.P, then the value of x is
A) 1 B) $\log_5 2$ C) $\log_2 5$ D) $\log_{10} 5$
- The value of the infinite product $6^{\frac{1}{2}} \times 6^{\frac{1}{2}} \times 6^{\frac{3}{8}} \times 6^{\frac{1}{4}} \times \dots$ is
A) 6 B) 36 C) 216 D) ∞
- The sum of an infinite geometric progression is 6 . If the sum of the first two terms is $9/2$, then what is the first term?
A) 1 B) $5/2$ C) 3 or $3/2$ D) 9 or 3
- What is the 10^{th} common term between the series $2 + 6 + 10 + \dots$ and $1 + 6 + 11 + \dots$?
A) 180 B) 186 C) 196 D) 206
- If p times the p th term of an AP is q times the q th term, then what is the $(p + q)$ th term equal to?
A) $p + q$ B) pq C) 1 D) 0
- What is the sum of all natural numbers between 200 and 400 which are divisible by 7 ?
A) 6729 B) 8712 C) 8729 D) 9276
- If the AM and GM between two numbers are in the ratio $m : n$, then what is the ratio between the two numbers?

A) $\frac{m+\sqrt{m^2-n^2}}{m-\sqrt{m^2-n^2}}$

B) $\frac{m+n}{m-n}$

C) $\frac{m^2-n^2}{m^2+n^2}$

D) $\frac{m^2+n^2-mn}{m^2+n^2+mn}$

13. What is the geometric mean of the data 2, 4, 8, 16, 32 ?

A) 2

B) 4

C) 8

D) 16

14. A square is drawn by joining mid-point of the sides of a square. Another square is drawn inside the second square in the same way and the process is continued indefinitely. If the side of the first square is 16 cm then what is the sum of the areas of all the squares?

A) 256 sq. cm

B) 512sq.cm

C) 1024 sq. cm

D) 512/3 sq. cm

15. The 59th term of an AP is 449 and the 449th term is 59. Which term is equal to 0 (zero)?

A) 501th term

B) 502 nd term

C) 508 th term

D) 509th term

16. If $1.3 + 2.3^2 + 3.3^3 + \dots + n.3^n = \frac{(2n-1)3^a+b}{3}$ then a and b are respectively

A) n, 2

B) n, 3

C) n + 1, 2

D) n + 1, 3

17. What is $\lim_{n \rightarrow \infty} \frac{1+2+3+\dots+n}{1^2+2^2+3^2+\dots+n^2}$ equal to?

A) 5

B) 2

C) 1

D) 0

18. The sum of the first five terms and the sum of the first ten terms of an AP are same. Which one of the following is the correct statement?

A) The first term must be negative

B) The common difference must be negative

C) Either the first term or the common difference is negative but not both

D) Both the first term and the common difference are negative

19. The arithmetic mean of the squares of the first n natural numbers is

A) $\frac{n(n+1)(2n+1)}{6}$

B) $\frac{n(n+1)(2n+1)}{2}$

C) $\frac{(n+1)(2n+1)}{6}$

D) $\frac{(n+1)(2n+1)}{3}$

20. The sum of first 10 terms and 20 terms of an AP are 120 and 440 respectively. What is the common difference?

A) 1

B) 2

C) 3

D) 4

21. If $S_n = nP + \frac{n(n-1)Q}{2}$, where S_n denotes the sum of the first n terms of an AP, then the common difference is

A) $P + Q$

B) $2P + 3Q$

C) $2Q$

D) Q

22. The fifth term of an AP of n terms, whose sum is $n^2 - 2n$, is

A) 5

B) 7

C) 8

D) 15

23. If the sum of m terms of an AP is n and the sum of n terms is m , then the sum of $(m + n)$ terms is

A) mn

B) $m + n$

C) $2(m + n)$

D) $-(m + n)$

24. The value of the product $6^{\frac{1}{2}} \times 6^{\frac{1}{4}} \times 6^{\frac{1}{8}} \times 6^{\frac{1}{16}} \times \dots$ up to infinite terms is

A) 6

B) 36

C) 216

D) 512

25. The third term of a GP is 3. What is the product of the first five terms?

A) 216

B) 226

C) 243

D) Cannot be determined due to insufficient data

26. If the ratio of AM to GM of two positive numbers a and b is $5 : 3$, then $a : b$ is equal to
 A) $3 : 5$ B) $2 : 9$ C) $9 : 1$ D) $5 : 3$
27. What is the sum of all two-digit numbers which when divided by 3 leave 2 as the remainder?
 A) 1565 B) 1585 C) 1635 D) 1655
28. If 3rd, 8th and 13th terms of a GP are p, q and r respectively, then which one of the following is correct?
 A) $q^2 = pr$ B) $r^2 = pq$ C) $pqr = 1$ D) $2q = p + r$
29. What is the n^{th} term of the sequence $25, -125, 625, -3125, \dots$?
 A) $(-5)^{2n-1}$ B) $(-1)^{2n}5^{n+1}$
 C) $(-1)^{2n-1}5^{n+1}$ D) $(-1)^{n-1}5^{n+1}$
30. Let S_n be the sum of the first n terms of an AP. If $S_{2n} = 3n + 14n^2$, then what is the common difference?
 A) 5 B) 6 C) 7 D) 9
31. What is the Fourth term of an AP of n terms whose sum is $n(n + 1)$?
 A) 6 B) 8 C) 12 D) 20
32. If g is the geometric mean of 2, 4, 8, 16, 32, 64, 128, 256, 512, 1024, then which one of the following is correct?
 A) $8 < g < 16$ B) $16 < g < 32$ C) $32 < g < 64$ D) $g > 64$
33. If p^{th} term of an AP is k , then what is the sum of p^{th} term, $(p + q)^{\text{th}}$ term and $(p - q)^{\text{th}}$ term of the AP?
 A) $2k$ B) $3k$ C) $4k$ D) $5k$
34. If p times the p^{th} term of an AP is equal to q times the q^{th} term ($p \neq q$), then what is the $(p + q)^{\text{th}}$ term equal to?
 A) 0 B) $p + q$ C) pq D) $pq(p + q)$
35. Let $a_1, a_2, a_3 \dots$ be in AP such that
 $a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{25} + a_{30} + a_{34} = 300$
 What is
 $a_1 + a_5 - a_{10} - a_{15} - a_{20} - a_{25} + a_{30} + a_{34}$
 equal to?
 A) 0 B) 25 C) 125 D) 250
36. If the first term of an AP is 2 and the sum of the first five terms is equal to one-fourth of the sum of the next five terms, then what is the sum of the first ten terms?
 A) -500 B) -250 C) 500 D) 250
37. If p, g_1, g_2 and q are in GP and m is the arithmetic mean of p and q , then $\frac{g_1^2}{g_2} + \frac{g_2^2}{g_1}$ is equal to
 A) m B) $2m$ C) 1 D) $\frac{1}{2}$
38. In a GP of positive terms, any term is equal to one-third of the sum of next two terms. What is the common ratio of the GP?
 A) $\frac{\sqrt{13}+1}{2}$ B) $\frac{\sqrt{13}-1}{2}$ C) $\frac{\sqrt{13}+1}{3}$ D) $\sqrt{13}$
39. What is the value of
 $\sqrt{8 + 2\sqrt{8 + 2\sqrt{8 + 2\sqrt{8 + \dots \infty}}}}$

A) 10

B) 8

C) 6

D) 4

40. The sum of the first n terms of the series $\frac{1}{2} + \frac{3}{4} + \frac{7}{8} + \frac{15}{16} + \dots$ is equal to

A) $2^n - n - 1$

B) $1 - 2^{-n}$

C) $1 - 2^{-n}$

D) $2^n - 1$



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Maths - Section A (MCQ.)

1 - C	2 - B	3 - D	4 - D	5 - C	6 - C	7 - B	8 - D	9 - B	10 - D
11 - C	12 - A	13 - C	14 - B	15 - C	16 - D	17 - D	18 - C	19 - C	20 - B
21 - D	22 - B	23 - D	24 - A	25 - C	26 - C	27 - C	28 - A	29 - D	30 - C
31 - B	32 - C	33 - B	34 - A	35 - A	36 - B	37 - B	38 - B	39 - D	40 - C

