doubtnut
India's Number 1 Education App

MATHS

BOOKS - MODERN PUBLICATION MATHS (KANNADA ENGLISH)

SEQUENCES AND SERIES

Mcq Level I

1. A sequence may be defined as a :

A. relations, whose range $\subseteq N$ (natural numbers)

B. function whose range $\subseteq N$

C. function whose domain $\subseteq N$

D. progression having real values.

Answer: C

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2. If the sum of n terms of an A.P. is given by :

$S_n = 3n + 2n^2$, then the common difference of the A.P. IS :

A. 3

B. 2

C. 6

D. 4

Answer: D

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3. The third of G.P. is 4. The product of its first 5 terms is :

A. 4^3

B. 4^4

C. 4^5

D. None of these

Answer: C

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4. If 9 times the 9th term of an A.P. is equal to 13 times the 13th term, then 22nd term of the A.P. is :

A. 0

B. 22

C. 220

D. 198

Answer: A

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5. If x,2y, 3z are in A.P. where the distinct numbers x,y,z are in G.P., then the common ratio of the G.P. is :

A. 3

B. $\frac{1}{3}$

C. 2

D. $\frac{1}{2}$

Answer: B

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6. If in an A.P. $S_n = qn^2$ and $S_m = qm^2$, where S_r denotes the sum of r terms of the A.P. , then S_q equals :

A. $\frac{q^3}{2}$

B. mnq

C. q^3

D. $(m+n)q^2$

Answer: C

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7. Let S_n denote the sum of the first n terms of an A.P. If $S_{2n} = 3S_n$, then $S_{3n} : S_n$ is equal to :

A. 4

B. 6

C. 8

D. 10

Answer: B

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8. The minimum value of $4^x + 4^{1-x}, x \in R$ is :

A. 2

B. 4

C. 1

D. 0

Answer: B

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9. Let S_n denote the sum of the cubes of the first n natural numbers and s_n denote the sum of the first n natural numbers. Then $\sum_{r=1}^{n} \frac{S_r}{S_r}$ equals :

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

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

C. $\frac{n^2+3n+2}{2}$

D. None of these

Answer: A

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10. If t_n denotes the nth term of the series :

$2 + 3 + 6 + 11 + 18 + \ldots\ldots\ldots\ldots$, then t_{50} is :

A. $49^2 - 1$

B. 49^2

C. $50^2 + 1$

D. $49^2 + 2$

Answer: D

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11. The length of three unequal edges of a rectangular solid block are in G.P. The volume of the block is $216cm^3$ and total surface area is $252cm^2$. The length of the longest edge is :

A. 12 cm

B. 6 cm

C. 18 cm

D. 3 cm

Answer: A

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12. Let S be the sum, P be the product and R be the sum of the reciprocals of 3 terms of G.P. Then $P^2R^3 : S^3$ is equal to :

A. $1:1$

B. $(\text{common ratio})^3 : 1$

C. $(\text{first term})^2 : (\text{common ratio})^2$

D. None of these

Answer: A

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13. In a G.P. of even number of terms, the sum of all terms in 5 times the sum of the odd terms. The common ratio of the G.P. is :

A. $-\frac{4}{5}$

B. $\frac{1}{5}$

C. 4

D. None of these

Answer: C

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14. If the roots of the cubic equation $x^3 - 9x^2 + a = 0$ are in A.P., Then find one of roots and a

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15. Find the 8th term of the sequence whose first three terms are 3, 3, 6 and each term after the second is the sum of the two terms preseding it .

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16. In an A.P. the pth term is q and the $(p+q)$ th term is 0. Then the qth term is :

A. $-p$

B. p

C. $p+q$

D. $p-q$

Answer: B

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17. Find the A. P. whose 7th and 13th terms are respectively 34 and 64 .

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18. The minimum value of the expression $3x + 3^{1-x}$, $x \in R$, is :

A. 0

B. $\frac{1}{3}$

C. 3

D. $2\sqrt{3}$

Answer: D

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19. If $\log_3 2, \log_3(2^x - 5)$ and $\log_3\left(2^x - \frac{7}{2}\right)$ are in A.P., then x is equal to :

A. 2

B. 3

C. 4

D. 2,3

Answer: D

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20. The sum of three numbers in A.P. is 27 and the sum of their squares is 293 . Find the numbers.

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21. If $a_1, a_2, a_3, \ldots\ldots\ldots\ldots a_n$ are in A.P., where $a_i > 0$ for all i, then the value of :

$$\frac{1}{\sqrt{a_1}+\sqrt{a_2}}+\frac{1}{\sqrt{a_2}+\sqrt{a_3}}+\ldots\ldots+\frac{1}{\sqrt{a_{n-1}}+\sqrt{a_n}}$$ is :

A. $\frac{1}{\sqrt{a_1}+\sqrt{a_n}}$

B. $\frac{1}{\sqrt{a_1}-\sqrt{a_n}}$

C. $\frac{n}{\sqrt{a_1}-\sqrt{a_n}}$

D. $\frac{n-1}{\sqrt{a_1}+\sqrt{a_n}}$

Answer: D

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22. The interior angles of a polygon are in A.P .The smallest angle is 120° and common difference is 5° . Find the number of the polygon.

A. 9

B. 16

C. 7

D. None of these

Answer: A

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23. Find the nth term of the G. P. 5, 25 , 125 , ... Also find its 10th term .

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24. The fourth seventh and tenth terms of a G.P. are p,q,r respectively, then :

A. $p^2 = q^2 + r^2$

B. $q^2 = pr$

C. $p^2 = qr$

D. $pqr + pq + 1 = 0$

Answer: B

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25. The sequence $a_n = \sin\left(\frac{\pi}{4} + n\pi\right)$ for n = 1,2,3,". . . . . is :

A. an arithmetic progression

B. a geometric progression

C. neither an arithmetic nor a geometric progression

D. both an arithmetic and a geometric progression

Answer: B

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26. If a,b,c are in A.P. and a^2, b^2, c^2 are in H.P. , then :

A. a=b=c

B. 2b $= 3a + c$

C. $b^2 = \sqrt{\frac{ac}{8}}$

D. None of these

Answer: A

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27. Two A.M.'s A_1 and A_2, two G.M.'s G_1 and G_2 and two H.M.'s H_1 and H_2 are inserted between any two numbers , then $H_1^{-1} + H_2^{-1}$ equals :

A. $A_1^{-1} + A_2^{-2}$

B. $G_1^{-1} + G_2^{-2}$

C. $\frac{G_1 G_2}{A_1 + A_2}$

D. $\frac{A_1 + A_2}{G_1 G_2}$

Answer: D

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28. Let T_r be the rth term of an A.P. for r = 1,2,3,. . . . . If for some positive integers m,n we have $T_m = \frac{1}{n}$ and $T_n = \frac{1}{m}$, then T_{mn} equals :

A. $\frac{1}{mn}$

B. $\frac{1}{m} + \frac{1}{n}$

C. 1

D. 0

Answer: C

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29. The value of the sume $\sum_{n=1}^{13} \left(i^n + i^{n+1}\right)$, where $i = \sqrt{-1}$, equals :

A. i

B. $i - 1$

C. $-i$

D. 0

Answer: B

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30. The harmonic mean of the roots of the equation :

$(5+\sqrt{2})x^2-(4+\sqrt{5})x+8+2\sqrt{5}=0$ is :

A. 2

B. 4

C. 6

D. 8

Answer: A

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31. The sum of the series $1 + 2x + 3x^2 + 4x^3 + \ldots.$ to ∞ where x lies between 0 and 1 i.e., $0 < x < 1$ is :

A. $\frac{1}{1+x}$

B. $\frac{1}{1-x}$

C. $\frac{1}{1-2x}$

D. $\frac{1}{(1-x)^2}$

Answer: D

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32. If $a > 0, b > 0, c > 0$ are in G.P. , then :

$\log_a x, \log_b x, \log_c x$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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33. $\frac{a+bx}{a-bx}=\frac{b+cx}{b-cx}=\frac{c+dx}{c-dx}, (x \neq 0)$ then a,b,c,d are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: B

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34. $a^x = b^y = c^z = d^t$ and a,b,c,d are in G.P. , then x,y,z,t are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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35. If $\log(a+c), \log(c-a), \log(a-2b+c)$ are in A.P., then :

A. a,b,c are in A.P.

B. a^2, b^2, c^2 are in A.P.

C. a,b,c are in G.P.

D. a,b,c are in H.P.

Answer: D

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36. If log 2, log $(2^x - 1)$ and $\log(2^x + 3)$ are in A.P., then 2,$2^x - 1$, $2^x + 3$ are in :

A. A.P.

B. H.P.

C. G.P.

D. None of these

Answer: C

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37. $\log_3 2$, $\log_6 2$, $\log_{12} 2$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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38. The consecutive numbers $\frac{1}{1+\sqrt{n}}, \frac{1}{1-n}, \frac{1}{1-\sqrt{n}}$ of a series are in :

A. H.P.

B. G.P.

C. A.P.

D. A.P.,G.P.

Answer: C

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39. The H.M. of two numbers is 4 and A.M. A and G.M. G satisfy the relation $2A + G^2 = 27$, the numbers are :

A. 6,3

B. 5,4

C. 5,-25

D. $-3, 11$

Answer: A

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40. If A,G and H are respectively the A.M., the G.M. and the H.M. between two positive numbers 'a' and 'b' , then :

A. $A = G^2 H$

B. $G^2 = AH$

C. $A^2 = GH$

D. $A = GH^2$

Answer: B

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41. If $x^{18} = y^{21} = z^{28}$, then 3, $3\log_y x$, $3\log_z y$, $7\log_x z$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: A

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42. The sum of all two digit odd numbers is :

A. 2475

B. 2530

C. 4905

D. 5049

Answer: A

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43. The coefficient of x^{99} in the expansion of :

$(x-1)(x-2)....(x-100)$ is :

A. 5050

B. 5000

C. -5050

D. -5000

Answer: A

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44. If $x > 1, y > 1, z > 1$ are in G.P., then :

$\frac{1}{1+\log x}, \frac{1}{1+\log y}, \frac{1}{1+\log z}$ are in :

A. A.P.

B. H.P.

C. G.P.

D. None of these

Answer: B

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45. If ln $(a+c), \ln(c-a), \ln(a-2b+c)$ are in A.P., then :

A. a,b,c are in A.P.

B. a^2, b^2, c^2 are in A.P.

C. a,b,c are in G.P.

D. a,b,c, are in H.P.

Answer: D

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46. If a,b,c are three unequal numbers such that a,b,c are in A.P. And b-a, c -b , a are in G.P., then $a:b:c$ is :

A. $1:2:3$

B. $1:3:5$

C. $2:3:4$

D. $1:2:4$

Answer: A

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47. If $(1.05)^{50} = 11.658$, the $\sum_{n=1}^{49} (1.05)^n$ equals :

A. 208.34

B. 212.12

C. 212.16

D. 213.16

Answer: C

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48. If $a_1, a_2, a_3 \ldots\ldots$ are in G.P. , then the value of $\Delta = \begin{vmatrix} \log a_n, \log a_{n+1}, \log a_{n+2} \\ \log a_{n+3}, \log a_{n+4}, \log a_{n+5} \\ \log a_{n+6}, \log a_{n+7}, \log a_{n+8} \end{vmatrix}$ is :

A. 0

B. $\log(a_n a_{n+8}) - 2\log a_{n+4}$

C. $\log a_1 a_3 - 2\log a_2$

D. -1

Answer: A

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49. Let $S_n = \frac{1}{1^3} + \frac{1+2}{1^3+2^3} + ... + \frac{1+2+....+n}{1^3+2^3....+n^3}, n = 1, 2, 3, ... ,$

Then S_n is not greater than :

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

B. 1

C. 2

D. 4

Answer: C

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50. if $a_1, a_2, a_3, \ldots\ldots, a_n$ are in A.P. with common difference d, then the sum of the series :

$\sin d[\cos eca_1 \cos eca_2 + \cos eca_2 \cos eca_3 + \ldots. \cos eca_{n-1} \cos eca_n]$ is :

A. $\sec a_1 - \sec a_n$

B. $\cos eca_1 - \cos eca_n$

C. $\cot a_1 - \cot a_n$

D. $\tan a_1 - \tan a_n$

Answer: C

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51. If x_1, x_2, x_3 as well as y_1, y_2, y_3 are in G.P. with the same common ration, then the points $(x_1, y_1), (x_2, y_2)$ and (x_3, y_3)

A. lie on a st. line

B. lie on an ellipse

C. lie on a circle

D. are vertices of the triangle

Answer: A

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52. The value of $(0.2)^{\log\sqrt{5}\left(\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+.....\right)}$ is :

A. 1

B. 2

C. $\frac{1}{2}$

D. 5

Answer: D

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53. If the 4th , 7 th and 10th term of a G.P. be a,b,c respectively, then the relation between a,b,c is :

A. $b = \frac{a+c}{2}$

B. $a^2 = bc$

C. $b^2 = ac$

D. $c^2 = ab$

Answer: C

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54. If $a_1, a_2, a_3, \ldots\ldots\ldots a_n$ are in H.P. , then $a_1, a_2 + a_2a_3 + \ldots\ldots\ldots + a_{n-1}a_n$ will be equal to :

A. a_1a_n

B. na_1a_n

C. $(n-1)a_1a_n$

D. None of these

Answer: C

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55. If the ratio of H.M. and G.M. between two numbers a and b is $4:5$, then the ratio of the two numbers will be

A. $1:2$

B. $2:1$

C. $4:1$

D. None fo these

Answer: C

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56. Let $n(>1)$ be a positive integer, the largest integer m such that (n^m+1) divides :

$(1+n+n^2+\ldots\ldots\ldots n^{127})$ is :

A. 32

B. 63

C. 64

D. 127

Answer: C

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57. Let T_r be the rth term of an A.P. for r = 1,2,3,. . . . . If for some positive integers m,n we have :

$T_m=\frac{1}{n}$ and $T_n=\frac{1}{m}$, then T_{mn} equals :

A. $\frac{1}{mn}$

B. $\frac{1}{m}+\frac{1}{n}$

C. 1

D. 0

Answer: C

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58. If a,b,c are in A.P. and a,mb,c are in G.P. , then a, $m^2b,$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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59. If $< a_n >$ is an A.P. and $a_1 + a_4 + a_7 + \ldots\ldots\ldots + a_{16} = 147$, then $a_1 + a_6 + a_{11} + a_{16}$ equals :

A. 96

B. 98

C. 100

D. None of these

Answer: B

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60. If the roots of the equation :

$(b - c)x^2 + (c - a)x + (a - b) = 0$ are equal, then a,b,c are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: A

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61. The value of the sum $\sum_{n=1}^{13}\left(i^n+i^{n+1}\right)$, where $i=\sqrt{-1}$,equals :

A. i

B. i-1

C. $-i$

D. 0

Answer: B

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62. If $5^{1+x}+5^{1-x}, \frac{a}{2}, 25^{x}+25^{-x}$ are in A.P., then the set of values of a for such an A.P. to exists is :

A. $(6, \infty)$

B. $[12, \infty)$

C. $(18, \infty)$

D. $(-12, \infty)$

Answer: B

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63. For a positive integer n, let

$a_n = 1+\frac{1}{2}+\frac{1}{3}+\frac{1}{4}+\ldots\ldots+\frac{1}{(2^n-1)}$. Then :

A. a (100) $\leq$ 100

B. a(200) $\leq$ 100

C. a(200) $>$ 100

D. None of these

Answer: A

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64. Let $S_1, S_2, \ldots\ldots$ be square such that for each $n > 1$, the length of a side of S_n equals the length of a diagonal of S_{n+1} . If the length of a side of S_1 is 10cm, then for which of the following values of n is the area of S_n less than 1 sq cm ?

A. 6

B. 8

C. 5

D. 4

Answer: B

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65. If $\Sigma n, \frac{\sqrt{10}}{3}\Sigma n^2, \Sigma n^3$ are in G.P., then the value of n is :

A. 3

B. 4

C. 2

D. Does not exist.

Answer: A

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66. If the ratio of A.M. between two positive real numbers a and b to their H.M. is $m:n$ then $a:b$ is equal to :

A. $\frac{\sqrt{m-n}+\sqrt{n}}{\sqrt{m-n}-\sqrt{n}}$

B. $\frac{\sqrt{n}+\sqrt{m-n}}{\sqrt{n}-\sqrt{m-n}}$

C. $\frac{\sqrt{m}+\sqrt{m-n}}{\sqrt{m}-\sqrt{m-n}}$

D. $\frac{\sqrt{m}-\sqrt{m-n}}{\sqrt{m}+\sqrt{m-n}}$

Answer: C

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67. The numbers 1,4,16 can be three terms (not necessarily consecutive) of :

A. no A.P.

B. only one G.P.

C. infinite number of A.P.'s

D. None of these

Answer: C

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68. A student read common difference of an A.P. as -2 instead of 2 and got the sum of first five terms as -5, the actual sum of first five terms is :

A. 25

B. -25

C. -35

D. 35

Answer: D

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69. The value of n for which $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$ is the A.M. between a and b is :

A. 0

B. $-\frac{1}{2}$

C. 1

D. -1

Answer: C

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70. If a,b,c are in A.P., the 3^a, 3^b, 3^c are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: B

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71. If a,b,c in A.P., then :

$10^{ax+10}, 10^{bx+10}, 10^{cx+10}, x \neq 10$ are in :

A. A.P.

B. G.P. only when $x > 0$

C. G.P. for all x

D. G.P. only when $x < 0$

Answer: C

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72. If the pth, qth and rth terms of a G.P. are , l,m,n respectively , then $l^{q-r}m^{r-p}n^{p-q}$ is :

A. 0

B. 1

C. pqr

D. lmn

Answer: B

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73. If $a^x = b^y = c^z$ and a,b,c are in G.P. , then x,y,z are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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74. The first term of a geometrical progression is 32 and the fifth is 162. Its sixth term is :

A. 243

B. 324

C. 256

D. 262

Answer: A

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75. If the sum of n natural numbers is one sixth of their squares , then n is :

A. 6

B. 7

C. 8

D. None of these

Answer: D

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76. The sum of areas of squares having sides 3,4,. . . . ., 10 is :

A. 360

B. 380

C. 340

D. 350

Answer: B

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77. If a,b,c,d are in H.P., then :

A. $a+b>c+d$

B. $a+c>b+d$

C. $a+d>b+c$

D. None of these

Answer: C

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78. If a,b,c are in H.P., then correct statement is :

A. $a^2+c^2>b^2$

B. $a^2+c^2>2b^2$

C. $a^2+c^2<2b^2$

D. $a^2+c^2=2b^2$

Answer: D

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79. Consider an infinite geometric series with first term a and common ratio r. If its sum is 4 and the second term is $\frac{3}{4}$, then :

A. $a = \frac{7}{4}, r = \frac{3}{7}$

B. $a = 2, r = \frac{3}{8}$

C. $a = \frac{3}{2}, r = \frac{1}{2}$

D. $a = 3, r = \frac{1}{4}$

Answer: D

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80. If a,b,c,d are positive real numbers such that $a + b + c + d = 12$, then $M = (a + b)(c + d)$ satisfies the relation :

A. $0 \leq M \leq 1$

B. $1 \leq M \leq 2$

C. $2 \leq M \leq 3$

D. $3 \leq M \leq 4$

Answer: A

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81. Let the positive numbers a,b,c,d be in A.P. Then abc,abd, acd, bcd are :

A. NOT in A.P. / G.P. / H.P.

B. in A.P.

C. in G.P.

D. in H.P.

Answer: D

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82. Fifth term of a G.P. is 2, then the product of its 9 terms is :

A. 256

B. 512

C. 1024

D. None of these

Answer: B

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83. The value of $2^{1/4}.4^{1/8}.8^{1/16}.....$ to ∞ is :

A. 1

B. 2

C. 3

D. 4

Answer: B

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84. If $1, \frac{1}{2}\log_3(3^{1-x}+2), \log_3(4.3^x-1)$are in A.P., then x equals :

A. $\log_3 4$

B. $1-\log_3 4$

C. $1-\log_4 3$

D. $\log_4 3$

Answer: B

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85. Sum of infinite numbers of terms is 20 and sum of their squares is 100.

The common ratio of G.P. is :

A. 5

B. $\frac{3}{5}$

C. $\frac{8}{5}$

D. $\frac{1}{5}$

Answer: B

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86. $1^3 - 2^3 + 3^3 - 4^3 + \ldots\ldots\ldots\ldots + 9^3 =$

A. 425

B. -425

C. 475

D. -475

Answer: A

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87. Let two numbers have arithmetic mean 9 and geometric mean 4. Then these numbers are the roots of the equation :

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

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

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

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

Answer: B

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88. Let T_r be the rth term of an A.P. whose first term is a and common difference is d. If for some positive integers, $m, n, m \neq n, T_n = \frac{1}{n}$ and $T_n = \frac{1}{m}$, then a -d equals :

A. 0

B. 1

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

D. $\frac{1}{m}+\frac{1}{n}$

Answer: A

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89. An infinite G.P. has first term 'x' and sum '5' , then x belongs to :

A. $x < -10$

B. $-10 < x < 0$

C. $0 < x < 10$

D. $x > 10$

Answer: C

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90. The value of $\sum_{k=1}^{10}\left(\sin\frac{2k\pi}{11}+i\cos\frac{2k\pi}{11}\right)$ is :

A. i

B. 1

C. -1

D. $-i$

Answer: D

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Mcq Level Ii

1. The 10th common term between the series :

$3+7+11+\ldots\ldots$ and $1+6+11+\ldots\ldots\ldots\ldots\ldots 1$ is :

A. 191

B. 193

C. 211

D. None of these

Answer: A

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2. The number of terms common to two A.P.'s

3,7,11,. . . . ., 407 and 2,9,16,. . . . . .709 is :

A. 14

B. 21

C. 28

D. None of these

Answer: A

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3. Let $S_n$denote the sum of first n terms of an A.P. If $S_{2n} = 3S_n$, then the ratio $\frac{S_{3n}}{S_n}$ is equal to :

A. 4

B. 6

C. 8

D. 10

Answer: B

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4. Consider an A.P. with first term 'a' and common difference 'd'. Let S_k denote the sum of first k terms. If $\frac{S_{kx}}{S_x}$ is independent of x, then :

A. a =2d

B. a=d

C. 2a=d

D. None of these

Answer: C

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5. If S_1, S_2 and S_3 denote the sum of first n_1, n_2 and n_3 terms respectively of an A.P.L , then :

$\frac{S_1}{n_1}.(n_2 - n_3) + \frac{S_2}{n_2}.(n_3 - n_1) + \frac{S_3}{n_3}.(n_1 - n_2)$ is equal to :

A. 0

B. 1

C. $S_1 S_2 S_3$

D. $n_1 n_2 n_3$.

Answer: A

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6. In the sequence 1,2,2,3,3,3,4,4,4,4. . . . . where n consecutive terms have the value n, the 150th term is :

A. 17

B. 16

C. 18

D. None of these

Answer: A

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7. It is given that $\frac{1}{1^4}+\frac{1}{2^4}+\frac{1}{3^4}+.....$ to $\infty=\frac{\pi^4}{90}$, then $\frac{1}{1^4}+\frac{1}{3^4}+\frac{1}{5^4}+.....$ to ∞ is :

A. $\frac{\pi^4}{96}$

B. $\frac{\pi^4}{45}$

C. $\frac{89\pi^4}{90}$

D. $\frac{\pi^4}{46}$

Answer: A

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8. If A.M. and G.M. of x and y are in the ration p : q, then $x : y$ is :

A. $p - \sqrt{p^2 + q^2} : p + \sqrt{p^2 + q^2}$

B. $p + \sqrt{p^2 + q^2} : p - \sqrt{p^2 + q^2}$

C. $p : q$

D. $p + \sqrt{p^2 + q^2} : p - \sqrt{p^2 - q^2}$

Answer: B

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9. Let (a_n) be a G.P. such that $\frac{a_4}{a_6} = \frac{1}{4}$ and $a_2 + a_5 = 216$. Then $a_1 =$

A. 12 or $\frac{108}{7}$

B. 10

C. 7 or $\frac{54}{7}$

D. None of these

Answer: A

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10. An A.P. consists of n (odd terms) and its middle term is m. Then the sum of the A.P. is :

A. 2mn

B. $\frac{1}{2}$mn

C. mn

D. mn^2

Answer: C

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11. If a,b,c are the sides of a ΔABC, which are in A.P.,then $\cot \frac{C}{2}$ equals :

A. $3\tan \frac{A}{2}$

B. $3\tan \frac{B}{2}$

C. $3\cot \frac{A}{2}$

D. $3\cot \frac{B}{2}$

Answer: A

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12. If S denotes the sum to infinity and S_n, the sum of n terms of the series $1+\frac{1}{2}+\frac{1}{4}+\frac{1}{8}+\ldots\ldots\ldots\ldots,$ such that $S-S_n<\frac{1}{1000}$, then the least value of n is :

A. 8

B. 9

C. 10

D. 11

Answer: D

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13. $1^2 + 1 + 2^2 + 2 + 3^2 + 3 + \ldots\ldots\ldots\ldots + n^2 + n$ is equal to :

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

B. $\left[\frac{n(n+1)}{2}\right]^2$

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

D. $\frac{n(n+1)(n+2)(n+3)}{4}$

Answer: C

Watch Video Solution

14. If H is the haromonic mean between P and W, then $\frac{H}{P}+\frac{H}{Q}$ is :

A. 2

B. $\frac{P+Q}{PQ}$

C. $\frac{PQ}{P+Q}$

D. None of these

Answer: A

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15. In $(m+1)$th, $(n+1)$th, $(r+1)$ th terms of an A.P. are in G.P. and m,n,r are in H.P., then ratio of the first term of the A.P. to its common difference interms of n is :

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

B. $-\frac{n}{2}$

C. $\frac{n}{3}$

D. $-\frac{n}{3}$

Answer: B

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16. If a, b, c are in A.P., p, q, r are in HP and ap, bq, cr are in GP, then $\frac{P}{r}+\frac{r}{P}$ is equal to

A. $\frac{a}{c}-\frac{c}{a}$

B. $\frac{a}{c}+\frac{c}{a}$

C. $\frac{b}{q}+\frac{q}{b}$

D. $\frac{b}{q}-\frac{q}{b}$

Answer: B

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17. If a ,b,c are in H.P., then correct statement is :

A. $a^2 + c^2 > b^2$

B. $a^2 + c^2 > 2b^2$

C. $a^2 + b^2 < 2b^2$

D. $a^2 + c^2 = 2b^2$

Answer: B

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18. If $\frac{a_2 a_3}{a_1 a_4} = \frac{a_2 + a_3}{a_1 + a_4} = 3\left(\frac{a_2 - a_3}{a_1 - a_4}\right)$, then :

a_1, a_2, a_3, a_4 are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: C

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19. The sum of the products of the ten numbers :

$\pm 1, \ \pm 2, \ \pm 3, \ \pm 4, \ \pm 5$, taking two at a time, is :

A. 165

B. -55

C. 55

D. None of these

Answer: B

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20. If n is an odd integer greater than or equal to 1, then the value of :

$n^3 - (n-1)^3 + (n-2)^3 - \ldots\ldots\ldots + (-1)^{n-1}.1^3$ is :

A. $\frac{(n+1)^2(2n-1)}{4}$

B. $\frac{(n-1)^2(2n-1)}{4}$

C. $\frac{(n+1)^2(2n+1)}{4}$

D. None of these

Answer: B

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21. The sum of the squares of three distinct real numbers which are in G.P. is S^2. If their sum is kS, then :

A. $\frac{1}{3} \leq k^2 \leq 3$

B. $\frac{1}{3} < k^2 < 1$

C. $1 < k < 3$

D. $\frac{1}{3} < k < 1$

Answer: A

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22. If $x = 1 + a + a^2 + \ldots\ldots\ldots$ to ∞ and $y = 1 + b + b^2 + \ldots\ldots\ldots$ to ∞ where a and b are proper fraction, then $1 + ab + a^2b^2 + \ldots\ldots$ to ∞ equals :

A. $\frac{xy}{y + x - 1}$

B. $\frac{x + y}{x - y}$

C. $\frac{x^2 + y^2}{x - y}$

D. None of these

Answer: A

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23. The sum of first 10 terms of the series :

$$\left(x+\frac{1}{x}\right)^2+\left(x^2+\frac{1}{x^2}\right)^2+\left(x^3+\frac{1}{x^3}\right)^2+\ldots\ldots \text{ is :}$$

A. $\left(\frac{x^{20}-1}{x^2-1}\right)\left(\frac{x^{22}+1}{x^{20}}\right)+20$

B. $\left(\frac{x^{18}-1}{x^2-1}\right)\left(\frac{x^{11}+1}{x^9}\right)+20$

C. $\left(\frac{x^{18}-1}{x^2-1}\right)\left(\frac{x^{11}-1}{x^9}\right)+20$

D. None of these

Answer: A

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24. If the sum of n terms of the series :

$\frac{1}{1^3}+\frac{1+2}{1^3+2^3}+\frac{1+2+3}{1^3+2^3+3^3}+\ldots\ldots$ in S_n , then S_n exceeds 199 for all n greater than :

A. 99

B. 50

C. 199

D. 100

Answer: C

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25. The minimum sum of the series :

$20 + 19\frac{1}{3} + 18\frac{2}{3} + \ldots$ is :

A. 310

B. 300

C. 320

D. None of these

Answer: A

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26. If a,b,c,d and p are distinct non -zero real numbers such that :

$(a^2+b^2+c^2)p^2-2(ab+bc+cd)p+(b^2+c^2+d^2)\leq 0$, then a,b,c,d

:

A. are in A.P.

B. are in G..

C. are in H.P.

D. satisfy ad =bc

Answer: B

Watch Video Solution

27. If a,b,c are in G.P.L, then the equations $ax^2+2bx+c=00$ and $dx^2+2ex+f=0$ have a common root if $\frac{d}{a},\frac{e}{b},\frac{f}{c}$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: A

Watch Video Solution

28. Let $a_1, a_2, \ldots\ldots, a_{10}$ be in A.P. and $h_1, h_2, \ldots\ldots\ldots, h_{10}$ be in H.P.

If $a_1 = h_1 = 2$ and $a_{10} = h_{10} = 3$, then $a_4 h_7$ is :

A. 2

B. 3

C. 5

D. 6

Answer: D

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29. The sum of :

$$(x+2)^{n-1}+(x+2)^{n-2}(x+1)+(x+2)^{n-3}(x+1)^2+.....+(x+1)$$

equals :

A. $(x+2)^{n-2}-(x+1)^n$

B. $(x+2)^{n-1}-(x+1)^{n-1}$

C. $(x+2)^n-(x+1)^n$

D. None of these

Answer: C

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30. If $x_1, x_2, ..., x_n$ are n non zero real numbers such that $\left(x_1^2+x_2^2+....+x_{n-1}^2\right)\left(x_2^2+x_3^2+x_3^2+.....+x_n^2\right) \leq (x_1x_2+x_2x_3+...$

, then $x_1, x_2, ..., x_n$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: B

Watch Video Solution

31. For $0 < \theta < \frac{\pi}{2}$, if $x = \sum_{n=0}^{\infty} \cos^{2n}\theta, y = \sum_{n=0}^{\infty} \sin^{2n}\theta, z = \sum_{n=0}^{\infty} \cos^{2n}\theta \sin^{2n}\theta$,then :

A. $xyz = xz + y$

B. $xyz = xy + z$

C. $xyz = x + y + z$

D. $xyz = yz + x$

Answer: B

Watch Video Solution

32. If $a_1, a_2, a_3 \ldots\ldots$ is an A.P. such that :

$a_1 + a_5 + a_{10} + a_{15} + a_{20} + a_{24} = 225,$ then

$a_1 + a_2 + a_3 + \ldots\ldots a_{23} + a_{24}$ is :

A. 909

B. 75

C. 750

D. 900

Answer: D

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33. If f(x) is a function satisfying $f(x+y) = f(x)f(y)$ for all x,y $\in N$ such that $f(1) = 3$ and $\sum_{x=1}^{n} f(x) = 120$

Then the value of n is :

A. 4

B. 5

C. 6

D. None of these

Answer: A

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34. If $\sin\alpha, \sin^2\alpha, 1, \sin^4\alpha, \sin^5\alpha, (-\pi < \alpha < \pi)$ are in A.P. , then α lies in the interval :

A. $\left(-\frac{\pi}{2}, \frac{\pi}{2}\right)$

B. $\left(-\frac{\pi}{3}, \frac{\pi}{3}\right)$

C. $\left(-\frac{\pi}{6}, \frac{\pi}{6}\right)$

D. None of these

Answer: D

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35. If A,G and H are respectively A.M.,G.M. and H.M. of three positive numbers a,b and c, then the equation whose roots are a,b,c is given by :

A. $x^3 - 3Ax^2 + 3G^3x - G^3 = 0$

B. $x^3 - 3Ax^2 + 3\left(\frac{G^3}{H}\right)x - G^2 = 0$

C. $x^3 + 3Ax^2 + 3\left(\frac{G^3}{H}\right)x - G^2 = 0$

D. $x^3 - 3Ax^2 - 3\left(\frac{G^3}{H}\right)x - G^2 = 0$

Answer: B

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36. $x + y + z = 15$ if 9, x,y,z,a are in A.P., while $\frac{1}{x} + \frac{1}{y} + \frac{1}{z} = (5)\,?\,(3)$ if 9, x,y,z,a are in H.P., then the value of a will be :

A. 1

B. 2

C. 3

D. 9

Answer: A

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37. If p,q,r are in A.P. and are positive, the roots of the quadratic equation $px^2 + qx + r = 0$ are real for :

A. $\left|\frac{r}{p} - 7\right| \geq 4\sqrt{3}$

B. $\left|\frac{r}{p} - 7\right| < 4\sqrt{3}$

C. All p and r

D. No p and r

Answer: A

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38. Let a^n be the nth term of the G.P. of positive numbers. Let $\sum_{n=1}^{100} a_{2n} = \alpha$ and $\sum_{n=1}^{100} a_{2n-1} = \beta$, such that $\alpha \neq \beta$ then the common ration is :

A. $\frac{\alpha}{\beta}$

B. $\frac{\beta}{\alpha}$

C. $\sqrt{\frac{\alpha}{\beta}}$

D. $\sqrt{\frac{\beta}{\alpha}}$

Answer: A

Watch Video Solution

39. Let f(x) be a function satisfying $f(x+y) = f(x)f(y)$ for all $x, y \in N$ such that f(1) = 3 and $\sum_{x=1}^{n} f(x) = 120$. Then the vlaue of n is :

A. 4

B. 5

C. 6

D. None of these

Answer: A

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40. For any odd integer $n \geq 1$, $n^3 - (n-1)^3 + \ldots.. + (-1)^{n-1} 1^3$ equals :

A. $\frac{1}{2}(n-1)^2(2n-1)$

B. $\frac{1}{4}(n-1)^2(2n-1)$

C. $\frac{1}{2}(n+1)^2(2n-1)$

D. $\frac{1}{4}(n+1)^2(2n-1)$

Answer: D

Watch Video Solution

41. The sum to infinity of the series :

$1+2\left(1-\frac{1}{n}\right)+3\left(1-\frac{1}{n}\right)^2+\ldots.$ is :

A. n^2

B. $n(n+1)$

C. $n\left(1+\frac{1}{n}\right)^2$

D. None of these

Answer: A

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42. If a,b,c are digits, then the rational number represented by 0.c ab ab ab . . . . . is :

A. $\frac{cab}{990}$

B. $\frac{99c+ab}{990}$

C. $\frac{99c + 10a + b}{99}$

D. $\frac{99c + 10a + b}{990}$

Answer: D

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43. If $I_n = \int_0^n \frac{1 - \sin 2nx}{1 - \cos 2n} dx$ then $I_1, I_2, I_3, \ldots\ldots$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: A

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44. If p,q,r , three positive real numbers are in A.P., then the roots of $px^2 + qx + r = 0$ are all real for :

A. $\left|\left(\frac{r}{p}\right) - 7\right| \geq 4\sqrt{3}$

B. $\left|\frac{p}{r} - 7\right| < 4\sqrt{3}$

C. All p and r

D. No p and r

Answer: A

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45. If $a_1, a_2, a_3, \ldots\ldots\ldots, a_n$ are in H.P. , then :

$$\frac{a_1}{a_2 + a_3 + \ldots\ldots\ldots + a_n}, \frac{a_2}{a_1 + a_3 + \ldots\ldots\ldots\ldots + a_n}, \ldots\ldots, \frac{a_n}{a_1 + a_2 + \ldots\ldots\ldots a_{n-}}$$

are in :

A. A.P.

B. G.P.

C. H.P.

D. A.G.P.

Answer: C

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46. The value of $\sum_{r=1}^{n} \log\left(\frac{a^r}{b^{r-1}}\right)$ is :

A. $\frac{n}{2}\log\left(\frac{a^n}{b^n}\right)$

B. $\frac{n}{2}\log\left(\frac{a^{n+1}}{b^n}\right)$

C. $\frac{n}{2}\log\left(\frac{a^{n+1}}{b^{n-1}}\right)$

D. $\frac{n}{2}\log\left(\frac{a^{n+1}}{b^{n+1}}\right)$

Answer: C

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47. If $a_1, a_2, \ldots\ldots\ldots, a_n$ are n non-zero real numbers such that $\left(a_1^2 + a_2^2 + \ldots\ldots\ldots + a_{n-1}^2\right)\left(a_2^2 + a_3^2 + \ldots\ldots\ldots + a_n^2\right) \leq (a_1 a_2 + a_2 a_3 + \ldots\ldots$ are in :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: B

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48. The sum of n terms of the series :

$\frac{1}{1.2.3.4} + \frac{1}{2.3.4.5} + \frac{1}{3.4.5.6.} + \ldots\ldots$ is :

A. $\frac{n^3 + 6}{18(n+1)(n+2)(n+3)}$

B. $\frac{1}{18} - \frac{1}{3(n+1)(n+2)}$

C. $\frac{1}{66} - \frac{1}{2(n+1)(n+2)(n+3)}$

D. None of these

Answer: B

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49. If $\sum_{r=1}^{\propto} t_r = \frac{n(n+1)(n+2)(n+3)}{8}$, where t_r denotes the rth term of a seires, then $\lim_{n \to \propto} \sum_{r=1}^{\propto} \frac{1}{t_r}$ is :

A. $\frac{1}{8}$

B. $\frac{1}{4}$

C. $\frac{1}{2}$

D. 1

Answer: C

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50. $\sum_{i=1}^{n} \sum_{j=1}^{i} \sum_{k=1}^{j} 1$ equals :

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

B. Σn^2

C. ${}^{n}C_3$

D. ${}^{n+2}C_3$

Answer: D

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51. If $\log_x a$, $a^{x/2}$ and $\log_b x$ are in G.P., then x equals :

A. $\log_a(\log_b a)$

B. $-\log_a\left(\log_a^b\right)$

C. $\log_a\left(\log_e^b\right) - \log_a(\log_c^a)$

D. None of these

Answer: A

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52. If x,y,z are in A.P. and $\tan^{-1}x, \tan^{-1}y$ and $\tan^{-1}z$ are also in A.P., then :

A. x=y=z

B. x=y = - a

C. x=1,y=2,z=3

D. x=2,y=4,z=6

Answer: A

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53. If P,Q,R be the A.M., G.M., H.M. respectively between any two rational numbers a and b, then P-Q is :

A. $\frac{a-b}{a}$

B. $\frac{a+b}{c}$

C. $\frac{2ab}{a+b}$

D. $\left(\frac{\sqrt{a}-\sqrt{b}}{\sqrt{2}}\right)^2$

Answer: D

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54. Let $S = \frac{8}{5} + \frac{16}{65} + ... + \frac{128}{2^{18}+1}$, then :

A. $S = \frac{1088}{545}$

B. $\frac{545}{1088}$

C. $S = \frac{1056}{545}$

D. $\frac{545}{1056}$

Answer: A

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55. The sides a,b,c of ΔABC are in G.P. , where $\log a - \log 2b, \log 2b - \log 3c, \log 3c - \log a$, are in A.P., then ΔABC is :

A. acute angled

B. obtuse angles

C. right angled

D. None of these

Answer: B

Watch Video Solution

56. Let α, β be the roots of $x^2 - x + p = 0$ and γ, δ be the roots of $x^2 - 4x + q = 0$. If $\alpha, \beta, \gamma, \delta$ are in G.P., then the integral value sof p and q respectively, are :

A. $-2, \ -32$

B. $-2, 3$

C. $-6, 3$

D. $-6, \ -32$

Answer: A

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57. If the sum of the first 2n terms of the A.P. 2,5,8,. . . . . is equal to the sum of the first n terms of the A.P. 57,59,61,. . . . . then n equals :

A. 10

B. 12

C. 11

D. 13

Answer: C

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58. The first term of a G. P. is 1. The sum of the third and fifth terms is 90.

Find the common ratio of G.P.

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59. Suppose a,b,c are in A.P. and a^2, b^2, c^2 are in G.P. If $a < b < c$ and $a + b + c = \frac{3}{2}$, then the value of a is :

A. $\frac{1}{2\sqrt{2}}$

B. $\frac{1}{2\sqrt{3}}$

C. $\frac{1}{2} - \frac{1}{\sqrt{3}}$

D. $\frac{1}{2} - \frac{1}{\sqrt{2}}$

Answer: D

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60. If sum of the roots of the quadratic equation $ax^2 + bx + c = 0$ is equal to the sum of the squares of their reciprocals, then $\frac{a}{c}, \frac{b}{a}$ and $\frac{c}{b}$ are in :

A. geometric progression

B. harmonic progression

C. arithmetic-geometric progression

D. arithmetic progression

Answer: B

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61. If f(x) is a polynomial function of second degree. IF f(1) = f(-1) and a,b,c are in A.P., then f'(a), f'(b), f'(c) are in :

A. G.P.

B. H.P.

C. arithmetic-geometric progression

D. A.P.

Answer: D

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62. The sum of first n terms of the series

$1^2 + 2.2^2 + 3^2 + 2.\ 4^2 + 5^2 + 2.\ 6^2 + \ldots\ldots\ldots$ is $\frac{n(n+1)^2}{2}$ when n is even. When, n is odd, the sum is :

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

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

C. $\frac{n(n+1)^2}{4}$

D. $\left[\frac{n(n+1)^2}{2}\right]^2$

Answer: B

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63. If $s = \sum_{n=0}^{\infty} a^n, y = \sum_{n=0}^{\infty} b^n, z = \sum_{n=0}^{\infty} c^n$, where a, b c are in A.P. and $|a| < 1, |b| < 1, |c| < 1$ then x,y,z are in :

A. A.P.

B. G.P.

C. H.P.

D. Arithmetic-Geometric progression

Answer: C

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64. If α, β are roots of $ax^2 + bx + c = 0, a \neq 0$ and $\alpha + \beta, \alpha^2 + \beta^2, \alpha^3 + \beta^3$ are in G.P. and δ be the discriminant, then :

A. $bc \neq 0$

B. $b\delta = 0$

C. $c\delta = 0$

D. $\delta = 0$

Answer: C

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65. Let $a_1, a_2, a_3, \ldots\ldots\ldots\ldots\ldots$ be terms of an A.P. If $\frac{a_1 + a_2 + \ldots\ldots\ldots + a_p}{a_1 + a_2 + \ldots\ldots\ldots + a_q} = \frac{p^2}{q^2}, p \neq q$, then $\frac{a_6}{a_{21}}$ equals :

A. $41/11$

B. $7/2$

C. $2/7$

D. $11/41$

Answer: D

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66. If $a_r > 0, r \in N$ and $a_1, a_2, a_3, \ldots\ldots\ldots, a_{2n}$ are in A.P. then :

$$\frac{a_1 + a_{2n}}{\sqrt{a_1} + \sqrt{a_2}} + \frac{a_2 + a_{2n-1}}{\sqrt{a_2} + \sqrt{a_3}} + \ldots\ldots \frac{a_n + a_{n+1}}{\sqrt{a_n} + \sqrt{a_{n+1}}}$$ is equal to :

A. n-1

B. $\frac{n(a_1 + a_{2n})}{\sqrt{a_1} + \sqrt{a_{n+1}}}$

C. $\frac{n-1}{\sqrt{a_1} + \sqrt{a_{n+1}}}$

D. None of these

Answer: B

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67. Let x,y,z be three positive prime numbers. The progression in which $\sqrt{x}, \sqrt{y}, \sqrt{z}$ can be three terms (not necessarily consecutive) is :

A. A.P.

B. G.P.

C. H.P.

D. None of these

Answer: D

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68. If $x = \sum_{n=0}^{\infty} a^n.$, $y = \sum_{n=0}^{\infty} b^n$, $z = \sum_{n=0}^{\infty} (ab)^n$, where $a, b < 1$, then :

A. $xyz = x + y + z$

B. $xz + yz = xy + z$

C. $xy + yz = xz + y$

D. $xy + xz = yz + x$

Answer: B

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69. $(\underbrace{666.....6}_{\text{n-digits}})^2 + (\underbrace{888...8}_{\text{n-digits}})$ is equal to :

A. $\frac{4}{9}(10^n - 1)$

B. $\frac{4}{9}(10^{2n} - 1)$

C. $\frac{4}{9}(10^n - 1)^2$

D. None of these

Answer: B

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70. If $\sum_{r=1}^{n} t_r = \sum_{k=1}^{n} \sum_{j=1}^{k} \sum_{i=1}^{j} 2$, then $\sum_{r=1}^{n} \frac{1}{t_r}$ equals :

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

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

C. $\frac{n-1}{n}$

D. $\frac{n}{n-1}$

Answer: B

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71. The odd numbers are divides as follows :

$$\begin{array}{cccccc} & & 1 & 3 & & \\ & 5 & 7 & 9 & 11 & \\ 13 & 15 & 17 & 19 & 21 & 23 \end{array}$$

..... then the sum of nth row is :

A. $2^{n-1}\left[2^n + 2^{n-1} - 1\right]$

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

C. 2n

D. $4n^3$

Answer: D

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72. If x_1, x_2, x_3 as well as y_1, y_2, y_3 are in G.P. with the same common ratio, then the points $(x_1, y_1), (x_2, y_2)$ and (x_3, y_3) :

A. lie on a st. line

B. lie on an ellipse

C. lie on a circle

D. are vertices of a triangle

Answer: A

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73. If $a_1, a_2, \ldots\ldots\ldots\ldots\ldots a_n$ are in H.P., then the expression $a_1a_2 + a_2a_3 + \ldots\ldots\ldots + a_{n-1}a_n$ is equal to :

A. $n(a_1 - a_n)$

B. $(n-1)(a_1 - a_n)$

C. na_1a_n

D. $(n-1)a_1a_n$

Answer: D

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74. In a geometric progression consisting of positive terms, each term equals the sum of the next two terms. Then the common ratio of this progression equals :

A. $\frac{1}{2}\sqrt{5}$

B. $\sqrt{5}$

C. $\frac{1}{2}(\sqrt{5}-1)$

D. $\frac{1}{2}(1-\sqrt{5})$

Answer: C

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75. The first two terms of a geometric progression add upto 12. The sum of the third and the fourth term is 48.If the terms of the geometric

progression are alternatively positive and negative, then the first term is

:

A. 4

B. -4

C. -12

D. 12

Answer: C

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76. The sum to infinity of the series :

$1+\frac{2}{3}+\frac{6}{3^2}+\frac{10}{3^3}+\frac{14}{3^4}+\ldots\ldots\ldots\ldots$ is :

A. 2

B. 3

C. 4

D. 6

Answer: B

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77. If the sum of first n terms of an A.P. is cn^2, then the sum of squares of these n terms is :

A. $\frac{n(4n^2-1)c^2}{6}$

B. $\frac{n(4n^2+1)c^2}{3}$

C. $\frac{n(4n^2-1)c^2}{3}$

D. $\frac{n(4n^2+1)c^2}{6}$

Answer: C

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Latest Questions

1. A person is to count 4500 currency notes. Let a_n denote the number of notes he counts in the nth minute. If $a_1 = a_2 = \ldots\ldots\ldots = a_{10} = 150$ and $a_{11}, a_{12}, \ldots\ldots\ldots\ldots$ are in an A.P. with common difference -2, then the time taken by him to count at notes is :

A. 24 mintures

B. 34 minutes

C. 125 minutes

D. 135 minutes

Answer: B

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2. A man save Rs 200 in each of the first three months of his service. In each of the subsequent months his saving increases by Rs 40 more than

the saving of immediately previous month. His total saving from the start of servie will be Rs 11040 after :

A. 18 months

B. 19 months

C. 20 months

D. 21 months

Answer: D

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3. Let a_n be the nth term of an A.P. If $\sum_{r=1}^{100} a_{2r} = \alpha$ and $\sum_{r=1}^{100} a_{2r-1} = \beta$, then the common difference of the A.P. is :

A. $\alpha - \beta$

B. $\frac{\alpha - \beta}{100}$

C. $\beta - \alpha$

D. $\frac{\alpha - \beta}{200}$

Answer: B

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4. If 100 times the 100th 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

B. 150 times its 50th term

C. 150

D. zero

Answer: D

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5. Let $a_1, a_2, a_3, \ldots\ldots\ldots\ldots\ldots\ldots$ be in harmonic progression with $a_1 = 5$ and $a_{20} = 25$. The least positive integer n for which $a_n < 0$ is :

A. 22

B. 23

C. 24

D. 25

Answer: D

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6. If x, y, z are in A.P. and $\tan^{-1} x, \tan^{-1} y$ and $\tan^{-1} z$ are also in A.P. then :

A. 2x=3y= 6z

B. 6x=3y=2z

C. 6x=4y=3z

D. x=y=z

Answer: D

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7. The sum of first 20 terms of 0.7, 0.77, 0.777,. . . . ., is :

A. $\frac{7}{9}(99-10^{-20})$

B. $\frac{7}{81}(179+10^{-20})$

C. $\frac{7}{9}(99+10^{-20})$

D. $\frac{7}{81}(179-10^{-20})$

Answer: B

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8. Three positive numbers froman increasing G.P. If middle term in this G.P. is doubled, the new numbers are in A.P. Then the common ratio of the G.P. is :

A. $3+\sqrt{2}$

B. $2-\sqrt{3}$

C. $2+\sqrt{3}$

D. $\sqrt{2}+\sqrt{3}$

Answer: C

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9. If $(10)^9+2(11)^1(10)^8+3(11)^2(10)^7+\ldots\ldots\ldots\ldots+10(11)^9=k(10)^9$, then k is equal to :

A. $\frac{441}{100}$

B. 100

C. 110

D. $\frac{121}{10}$

Answer: B

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10. If m is the A.M. of two distinct real numbers l and n $(l, n > 1)$ and G_1, G_2 and G_3 are three geometric means between l and n , then $G_1^4 + 2G_2^4 + G_3^4$ equals :

A. $4l^2mn$

B. $4lm^2n$

C. $4lmn^2$

D. $4l^2m^2n^2$

Answer: B

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11. The sum of first 9 terms of the series :

$$\frac{1^3}{1}+\frac{1^3+2^3}{1+3}+\frac{1^3+2^3+3^3}{1+3+5}+\ldots\ldots\ldots \text{ is :}$$

A. 71

B. 96

C. 142

D. 192

Answer: B

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Recent Competitive Questions

1. If the straight line $ax+by+c=0$ always passes thorugh (1, - 2) , then a,b,c, are in :

A. H.P.

B. A.P.

C. G.P.

D. None of these

Answer: B

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2. If a,b,c are in A.P., then 7^a, 7^b and 7^c are in :

A. A.P.

B. G.P.

C. H..

D. None of these

Answer: B

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3. The value of $(0.2)\log_{\sqrt{5}}\left(\frac{1}{4}+\frac{1}{8}+\frac{1}{16}+\ldots\ldots\text{ to }\infty\right)$ is :

A. 4

B. $\frac{1}{4}$

C. 2

D. $\frac{1}{2}$

Answer: A

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4. $11^3+12^3+13^3+\ldots\ldots\ldots\ldots+20^3$ is :

A. An even integer

B. An odd integer divisible by 5

C. Multiple of 10

D. An odd integer but not a multiple of 5.

Answer: B

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5. If the $2^{nd}$and 5th terms of G.P. are 24 and 3 respectively then the sum of 1st six terms is :

A. $\frac{189}{2}$

B. $\frac{189}{5}$

C. $\frac{179}{2}$

D. $\frac{2}{189}$

Answer: A

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