

MATHS

BOOKS - PATHFINDER MATHS (BENGALI ENGLISH)

SAME SPECIAL SEQUENCE

Question Bank

1. Let $< a_n >$ be the sequence defined by

 $a_1=3$ and $a_n=3a_{n-1}+2$ for all n>1

..Find a_3 .



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2. Find the 8th term of the G.P 0.3,0.06,0.012.....



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3. Find the sum of 41,36,31....to 12terms.



4. How many terms are there in the A.P.7,10,13,.....,43?



5. Show that the sequence $\log a, \log(ab), \log(ab^2), \log(ab^3), \ldots$ is in A.P



6. If the m^{th} term and the n^{th} term of an A.P. are respectively $\frac{1}{n}$ and $\frac{1}{m}$, then the $(mn)^{th}$

term of the A.P. is



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7. Determine the number of terms in the A.P.3,7,11,.....,407.Also find its 20th term from the last.



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8. In a certain A.P the 24th term is twice the 10th term. Prove that the 72nd term is twice

the 34th term.



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9. The sum of three numbers in A.P is 12 and sum of their cubes is 288. Find the numbers.



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10. Find the sum first 24 terms of A.P. $a_1,\,a_2,\,a_3$

,....., if it is know that

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

11. If the P^{th} and q^{th} terms of an A.Pare a and b respectively,then show that the sum of first (p+q) terms of thath A.P is 1/2(p+q) $\left(a+b+\frac{a-b}{p-q}\right)$



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12. If s_1 be the sum of (2n+1) terms of an A.P and s_2 be the sum its odd terms, then prove

that $s_1\!:\!s_2=(2n+1)\!:\!(n+1)$



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13. The ratio if the sum of n terms of two A.P.s is (7n+1):(4n+27). Find the ratio of their 22^{nd} terms.



14. If
$$a^2, b^2, c^2$$
 are in A.P , then prove that
$$\frac{1}{b+c}, \frac{1}{c+a}, \frac{1}{a+b}$$
 are in A.P

15. Find the sum of the following series

6+66+666+.....to n term



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16. If the first and the $n^{
m th}$ term of a G.P. are a and b, respectively, and if P is the product of n terms, prove that $P^2=(ab)^n$.



17. Find the equations of the lines, which cutoff intercepts on the axes whose sum and product are 1 and -6, respectively.

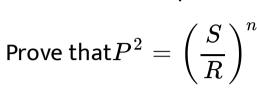


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18. If $S_1,\,S_2$ and S_3 be respectively the sum of n, 2n and 3n terms of a G.P .Prove that $S_1(S_3-S_2)=(S_2-S_1)^2.$



19. If S be the sum. P be the product, and R the sum of the reciprocals of n terms in a G.P.,





.Prove

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20. If
$$x=1+a+a^2+....\infty$$
 where $|a|<1$ and $y=1+b+b^2+....\infty$ where $|b|<1$

that

 $1 + ab + a^2b^2 + \dots \infty = \frac{xy}{x + y - 1}$

21. Prove that

$$\left(2^{rac{1}{4}}\cdot 4^{rac{1}{8}}\cdot 8^{rac{1}{16}}\cdot 16^{rac{1}{32}}.....\infty
ight)=2$$



22. Find the value of n so that $\frac{a^{n+1}+b^{n+1}}{a^n+b^n}$

may be the geometric mean between a and b.



23. Insert 4 arithmetic mean between 5 and 20.



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24. If n is a even number, find the sum of the series upto terms n $1^2 - 2^2 + 3^2 - 4^2 + 5^2 - \dots$



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 $1 + 5 + 12 + 22 + 35 + \dots$ to n terms.

25. Find the sum of the following series:

26. Sum the following series to n terms



27. If f is a function satisfying f(x+y)=f(x)f(y) for

all x,y
$$\in$$
 N which that f (1)=3and $\sum_{i=1}^{n}f(x)$ =

120, find the value of n.



28. If A and G be A.M. and G.M., respectively between two positive numbers, prove that the numbers are $A\pm\sqrt{(A+G)(A-G)}$.

