

MATHS

BOOKS - INDEPENDENTLY PUBLISHED MATHS (ENGLISH)

SEQUENCES AND SERIES

Examples

1. An infinite sequence



2. a finite sequence



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3. an infinite series



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4. If $t_n=\dfrac{2n}{n+1}, \,$ find the first five terms of the sequence.

5. If $a_1 = 3$ and $a_n = 2a_{n-1} + 5$, find a_4 .



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6. If $a_1 = 1$, $a_2 = 1$, and $a_n = a_{n-1} + a_{n-2}$ for $n \geq 3$, find the first 7 terms of the sequence.



7. Express the series $2+4+6+\ldots+20$ in sigma notation.



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8. Evaluate $\sum_{k=0}^{5} k^2$



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9. Find the 28th term of the arithmetic sequence 2, 5, 8,



10. Express the sum of 28 terms of the series of this sequence using sigma notation.



11. Find the sum of the first 28 terms of the series.



12. If $t_8 = 4$ and $t_{12} = -2$, find the first three terms of the arithmetic sequence.



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13. In an arithmetic series, if $S_n=3n^2+2n$, find the first three terms.



14. Find the seventh term of the geometric sequence $1, 2, 4, \ldots$, and



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15. the sum of the first seven terms.



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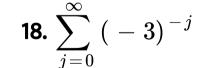
16. The first term of a geometric sequence is 64, and the common ratio is $\frac{1}{4}$.

For what value of n is $t_n = \frac{1}{4}$?



17. Evaluate $\lim_{n o \infty} \sum_{k=1}^n \frac{1}{2^k}$ and







19. Find the exact value of the repeating decimal 0.4545...



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Exercises

1. If $a_1=3$ and $a_n=n+a_{n-1}$, the sum of the first five term is

A. 17

B. 30

C. 42

D. 45

Answer: D



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2. If $a_1 = 5$ and $a_n = 1 + \sqrt{a_{n-1}}$, find a_3 .

A. 2.623

B. 2.635

C. 2.673

D. 2.799

Answer: D



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3. If the repeating decimal $0.237\overline{37}...$ is written as a fraction in lowest terms, the sum of the numerator and denominator is

A. 16

B. 47

C. 245

D. 334

Answer: C



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4. The first three terms of a geometric sequence are $\sqrt[4]{3}$, $\sqrt[8]{3}$, 1. The fourth term is

A. $\sqrt[32]{3}$

B. $\sqrt[16]{3}$

C.
$$\frac{1}{\sqrt[16]{3}}$$
D. $\frac{1}{\sqrt[8]{3}}$

Answer: D



$$S=rac{2}{3} \ ext{and} \ t_1=rac{2}{7}.$$
 What is r?

A.
$$\frac{2}{3}$$
B. $-\frac{4}{7}$

$$-\frac{1}{7}$$

$$\mathsf{C.}\,\frac{2}{7}$$

$$\mathsf{D.}\,\frac{4}{7}$$

D.
$$\frac{4}{7}$$

Answer: D

