



MATHS

BOOKS - INDEPENDENTLY PUBLISHED

MATHS (ENGLISH)

SEQUENCES AND SERIES

Examples

1. An infinite sequence



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2. a finite sequence



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3. an infinite series



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



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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.



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7. Express the series $2 + 4 + 6 + \dots + 20$ 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,



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



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



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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.



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14. Find the seventh term of the geometric sequence 1, 2, 4, ..., 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 $t_n = \frac{1}{4}$?



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



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18. $\sum_{j=0}^{\infty} (-3)^{-j}$



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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 $0.237\overline{37}\dots$ 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



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5. In an infinite geometric series

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

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

B. $-\frac{4}{7}$

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

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

Answer: D



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