

Chapter 8 Sequences and Series Test Sample Questions

Lesson 122 | Algebra II | Arithmetic sequences and series • Geometric sequences and series

https://www.youtube.com/watch?v=wRBgNs4UQ_E

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

An arithmetic sequence starts at 9 with common difference 8. Find term 10 and the sum of the first 10 terms.

02

A geometric sequence starts at 4 with ratio 2. Find term 5 and the sum through that term.

03

An arithmetic sequence starts at 3 with common difference 13. Find term 10 and the sum of the first 10 terms.

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04

Find the sum of the infinite geometric series with first term 72 and ratio $\frac{1}{8}$.

05

An arithmetic sequence starts at 14 with common difference 9. Find term 9 and the sum of the first 9 terms.

06

A geometric sequence starts at 5 with ratio 7. Find term 6 and the sum through that term.

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01

An arithmetic sequence starts at 9 with common difference 8. Find term 10 and the sum of the first 10 terms.

$$a_m = 9 + (m-1)8; a_{10} = 81. S_m = m(a_1 + a_m)/2, \text{ giving } S_{10} = 450.$$

02

A geometric sequence starts at 4 with ratio 2. Find term 5 and the sum through that term.

$$a_m = 4 \cdot 2^{(m-1)}, \text{ so } a_5 = 64. S_5 = 4(2^5 - 1)/(2 - 1) = 124.$$

03

An arithmetic sequence starts at 3 with common difference 13. Find term 10 and the sum of the first 10 terms.

$$a_m = 3 + (m-1)13; a_{10} = 120. S_m = m(a_1 + a_m)/2, \text{ giving } S_{10} = 615.$$

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04

Find the sum of the infinite geometric series with first term 72 and ratio $1/8$.

$|r| = 1/8 < 1$, so $S = a_1/(1-r) = 72/(1-1/8) = 576/7$.

05

An arithmetic sequence starts at 14 with common difference 9. Find term 9 and the sum of the first 9 terms.

$a_m = 14 + (m-1)9$; $a_9 = 86$. $S_m = m(a_1 + a_m)/2$, giving $S_9 = 450$.

06

A geometric sequence starts at 5 with ratio 7. Find term 6 and the sum through that term.

$a_m = 5 \cdot 7^{(m-1)}$, so $a_6 = 84035$. $S_6 = 5(7^6 - 1)/(7 - 1) = 98040$.