

Algebra II Honors Chapter 8 Sequences and Series Part III

Lesson 124 | Algebra II | Arithmetic sequences and series • Geometric sequences and series

<https://www.youtube.com/watch?v=R104eQ6n35o>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

An arithmetic sequence starts at 5 with common difference 12. Find term 10 and the sum of the first 10 terms.

02

A geometric sequence starts at 9 with ratio 3. Find term 2 and the sum through that term.

03

An arithmetic sequence starts at 5 with common difference 11. Find term 11 and the sum of the first 11 terms.

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04

Find the sum of the infinite geometric series with first term 20 and ratio $\frac{1}{5}$.

05

An arithmetic sequence starts at 7 with common difference 5. Find term 9 and the sum of the first 9 terms.

06

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

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01

An arithmetic sequence starts at 5 with common difference 12. Find term 10 and the sum of the first 10 terms.

$$a_m = 5 + (m-1)12; a_{10} = 113. S_m = m(a_1 + a_m)/2, \text{ giving } S_{10} = 590.$$

02

A geometric sequence starts at 9 with ratio 3. Find term 2 and the sum through that term.

$$a_m = 9 \cdot 3^{(m-1)}, \text{ so } a_2 = 27. S_2 = 9(3^2 - 1)/(3 - 1) = 36.$$

03

An arithmetic sequence starts at 5 with common difference 11. Find term 11 and the sum of the first 11 terms.

$$a_m = 5 + (m-1)11; a_{11} = 115. S_m = m(a_1 + a_m)/2, \text{ giving } S_{11} = 660.$$

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04

Find the sum of the infinite geometric series with first term 20 and ratio $1/5$.

$|r| = 1/5 < 1$, so $S = a_1/(1-r) = 20/(1-1/5) = 25$.

05

An arithmetic sequence starts at 7 with common difference 5. Find term 9 and the sum of the first 9 terms.

$a_m = 7 + (m-1)5$; $a_9 = 47$. $S_m = m(a_1 + a_m)/2$, giving $S_9 = 243$.

06

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

$a_m = 2 \cdot 2^{(m-1)}$, so $a_5 = 32$. $S_5 = 2(2^5 - 1)/(2 - 1) = 62$.