

Algebra II Honors Chapter 8 Sequences and Series Part II

Lesson 123 | Algebra II | Arithmetic sequences and series • Geometric sequences and series

<https://www.youtube.com/watch?v=eiiWfmJ5H4M>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

An arithmetic sequence starts at 12 with common difference 8. Find term 7 and the sum of the first 7 terms.

02

A geometric sequence starts at 2 with ratio 3. Find term 5 and the sum through that term.

03

An arithmetic sequence starts at 12 with common difference 6. 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 15 and ratio $\frac{1}{5}$.

05

An arithmetic sequence starts at 4 with common difference 6. Find term 12 and the sum of the first 12 terms.

06

A geometric sequence starts at 9 with ratio 4. Find term 5 and the sum through that term.

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01

An arithmetic sequence starts at 12 with common difference 8. Find term 7 and the sum of the first 7 terms.

$$a_m = 12 + (m-1)8; a_7 = 60. S_m = m(a_1 + a_m)/2, \text{ giving } S_7 = 252.$$

02

A geometric sequence starts at 2 with ratio 3. Find term 5 and the sum through that term.

$$a_m = 2 \cdot 3^{(m-1)}, \text{ so } a_5 = 162. S_5 = 2(3^5 - 1)/(3 - 1) = 242.$$

03

An arithmetic sequence starts at 12 with common difference 6. Find term 10 and the sum of the first 10 terms.

$$a_m = 12 + (m-1)6; a_{10} = 66. S_m = m(a_1 + a_m)/2, \text{ giving } S_{10} = 390.$$

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04

Find the sum of the infinite geometric series with first term 15 and ratio $1/5$.

$|r| = 1/5 < 1$, so $S = a_1/(1-r) = 15/(1-1/5) = 75/4$.

05

An arithmetic sequence starts at 4 with common difference 6. Find term 12 and the sum of the first 12 terms.

$a_m = 4 + (m-1)6$; $a_{12} = 70$. $S_m = m(a_1 + a_m)/2$, giving $S_{12} = 444$.

06

A geometric sequence starts at 9 with ratio 4. Find term 5 and the sum through that term.

$a_m = 9 \cdot 4^{(m-1)}$, so $a_5 = 2304$. $S_5 = 9(4^5 - 1)/(4 - 1) = 3069$.