

Algebra II Honors Big Idea Chapter 8 Sequence and Series Part I

Lesson 121 | Algebra II | Arithmetic sequences and series • Geometric sequences and series

<https://www.youtube.com/watch?v=vHcltyuKt2s>

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

An arithmetic sequence starts at 12 with common difference 2. Find term 7 and the sum of the first 7 terms.

02

A geometric sequence starts at 14 with ratio 6. Find term 5 and the sum through that term.

03

An arithmetic sequence starts at 2 with common difference 10. 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 65 and ratio $\frac{1}{5}$.

05

An arithmetic sequence starts at 10 with common difference 11. Find term 11 and the sum of the first 11 terms.

06

A geometric sequence starts at 14 with ratio 7. Find term 5 and the sum through that term.

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01

An arithmetic sequence starts at 12 with common difference 2. Find term 7 and the sum of the first 7 terms.

$$a_m = 12 + (m-1)2; a_7 = 24. S_m = m(a_1 + a_m)/2, \text{ giving } S_7 = 126.$$

02

A geometric sequence starts at 14 with ratio 6. Find term 5 and the sum through that term.

$$a_m = 14 \cdot 6^{(m-1)}, \text{ so } a_5 = 18144. S_5 = 14(6^5 - 1)/(6 - 1) = 21770.$$

03

An arithmetic sequence starts at 2 with common difference 10. Find term 11 and the sum of the first 11 terms.

$$a_m = 2 + (m-1)10; a_{11} = 102. S_m = m(a_1 + a_m)/2, \text{ giving } S_{11} = 572.$$

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04

Find the sum of the infinite geometric series with first term 65 and ratio $1/5$.

$|r| = 1/5 < 1$, so $S = a_1/(1-r) = 65/(1-1/5) = 325/4$.

05

An arithmetic sequence starts at 10 with common difference 11. Find term 11 and the sum of the first 11 terms.

$a_m = 10 + (m-1)11$; $a_{11} = 120$. $S_m = m(a_1 + a_m)/2$, giving $S_{11} = 715$.

06

A geometric sequence starts at 14 with ratio 7. Find term 5 and the sum through that term.

$a_m = 14 \cdot 7^{(m-1)}$, so $a_5 = 33614$. $S_5 = 14(7^5 - 1)/(7 - 1) = 39214$.