

Algebra II Honors Big Idea Sequences and Series Part IV

Lesson 125 | Algebra II | Arithmetic sequences and series • Geometric sequences and series

<https://www.youtube.com/watch?v=DXyW0BnUUSI>

Related review: exact coverage needs teacher confirmation.

Name: _____ Date: _____ Show your reasoning.

01

An arithmetic sequence starts at 9 with common difference 14. Find term 11 and the sum of the first 11 terms.

02

A geometric sequence starts at 13 with ratio 3. Find term 4 and the sum through that term.

03

An arithmetic sequence starts at 7 with common difference 11. Find term 9 and the sum of the first 9 terms.

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04

Find the sum of the infinite geometric series with first term 156 and ratio $\frac{1}{13}$.

05

An arithmetic sequence starts at 6 with common difference 8. Find term 9 and the sum of the first 9 terms.

06

A geometric sequence starts at 12 with ratio 4. Find term 8 and the sum through that term.

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01

An arithmetic sequence starts at 9 with common difference 14. Find term 11 and the sum of the first 11 terms.

$$a_m = 9 + (m-1)14; a_{11} = 149. S_m = m(a_1 + a_m)/2, \text{ giving } S_{11} = 869.$$

02

A geometric sequence starts at 13 with ratio 3. Find term 4 and the sum through that term.

$$a_m = 13 \cdot 3^{(m-1)}, \text{ so } a_4 = 351. S_4 = 13(3^4 - 1)/(3 - 1) = 520.$$

03

An arithmetic sequence starts at 7 with common difference 11. Find term 9 and the sum of the first 9 terms.

$$a_m = 7 + (m-1)11; a_9 = 95. S_m = m(a_1 + a_m)/2, \text{ giving } S_9 = 459.$$

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04

Find the sum of the infinite geometric series with first term 156 and ratio $1/13$.

$|r| = 1/13 < 1$, so $S = a_1/(1-r) = 156/(1-1/13) = 169$.

05

An arithmetic sequence starts at 6 with common difference 8. Find term 9 and the sum of the first 9 terms.

$a_m = 6 + (m-1)8$; $a_9 = 70$. $S_m = m(a_1 + a_m)/2$, giving $S_9 = 342$.

06

A geometric sequence starts at 12 with ratio 4. Find term 8 and the sum through that term.

$a_m = 12 \cdot 4^{(m-1)}$, so $a_8 = 196608$. $S_8 = 12(4^8 - 1)/(4 - 1) = 262140$.