

2022 The Secret of Telescoping Series and Geometric Series (Rokawski Calculus 10.2 Pa...

Lesson 337 | Calculus BC | Infinite series and telescoping • Geometric sequences and series

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

Original practice aligned to the saved video title.

Name: _____ Date: _____ Show your reasoning.

01

Evaluate Σ from $m=1$ to ∞ of $4/((m+11)(m+12))$.

02

A geometric sequence starts at 14 with ratio 7. Find term 3 and the sum through that term.

03

Evaluate Σ from $m=1$ to ∞ of $6/((m+5)(m+6))$.

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04

Find the sum of the infinite geometric series with first term 130 and ratio $\frac{1}{10}$.

05

Evaluate $\sum$ from $m=1$ to ∞ of $5/((m+12)(m+13))$.

06

A geometric sequence starts at 10 with ratio 6. Find term 4 and the sum through that term.

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01 Evaluate Σ from $m=1$ to ∞ of $4/((m+11)(m+12))$.

Term= $4[1/(m+11)-1/(m+12)]$. Partial sum= $4[1/12-1/(N+12)]$. Limit= $1/3$.

02 A geometric sequence starts at 14 with ratio 7. Find term 3 and the sum through that term.

$a_m = 14 \cdot 7^{(m-1)}$, so $a_3 = 686$. $S_3 = 14(7^3-1)/(7-1) = 798$.

03 Evaluate Σ from $m=1$ to ∞ of $6/((m+5)(m+6))$.

Term= $6[1/(m+5)-1/(m+6)]$. Partial sum= $6[1/6-1/(N+6)]$. Limit= 1 .

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04

Find the sum of the infinite geometric series with first term 130 and ratio $1/10$.

$|r| = 1/10 < 1$, so $S = a_1/(1-r) = 130/(1-1/10) = 1300/9$.

05

Evaluate Σ from $m=1$ to ∞ of $5/((m+12)(m+13))$.

Term= $5[1/(m+12)-1/(m+13)]$. Partial sum= $5[1/13-1/(N+13)]$. Limit= $5/13$.

06

A geometric sequence starts at 10 with ratio 6. Find term 4 and the sum through that term.

$a_m = 10 \cdot 6^{(m-1)}$, so $a_4 = 2160$. $S_4 = 10(6^4-1)/(6-1) = 2590$.