

11 5 study and intervention infinite geometric series

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How to Solve an Infinite Geometric Series**

An infinite geometric series is a sum of terms that form a geometric progression, where each term is obtained by multiplying the previous term by a constant ratio.

What Does a Geometric Series Converge To?

An infinite geometric series converges to a finite value if the absolute value of the common ratio, denoted by $|r|$, is less than 1. In this case, the series converges to the limit:

$$S = a / (1 - r)$$

where a is the first term and r is the common ratio.

How to Find the Limit of a Geometric Series

To find the limit of an infinite geometric series, simply take the limit of the sum as the number of terms approaches infinity:

$$\lim_{n \rightarrow \infty} S_n = S = a / (1 - r)$$

How to Calculate the Sum of a Geometric Series

To calculate the sum of a finite geometric series with n terms, use the formula:

$$S_n = a * (1 - r^n) / (1 - r)$$

How to Calculate Infinite Series

Infinite series are sums of an infinite number of terms. To calculate an infinite series, you must first determine if it converges. If it converges, use the formula:

$$S = a / (1 - r)$$

How to Find the nth Term of an Infinite Geometric Series

To find the nth term of an infinite geometric series, use the formula:

$$a_n = a * r^{(n-1)}$$

How to Tell If an Infinite Geometric Series Converges or Diverges

An infinite geometric series converges if $|r| < 1$. If $|r| \geq 1$, the series diverges.

How to Solve a Geometric Sequence

A geometric sequence is a sequence of numbers where each term is obtained by multiplying the previous term by a constant ratio. To solve a geometric sequence, find the first term and the common ratio.

What is the Formula for the Sum of an Infinite Geometric Series?

The formula for the sum of an infinite geometric series is:

$$S = a / (1 - r)$$

What Condition Determines If an Infinite Geometric Series Converges?

The infinite geometric series converges if $|r| < 1$.

How to Prove Sum to Infinity

To prove the sum to infinity of a geometric series, use the limit definition of a sum:

$$\lim_{(n \rightarrow \infty)} S_n = S = a / (1 - r)$$

Why is it Called a Geometric Sequence?

It is called a geometric sequence because the ratio of consecutive terms is constant.

What is Common Ratio in Math?

The common ratio is the constant by which each term in a geometric sequence is obtained by multiplying the previous term.

How to Find r in Geometric Series?

To find r in a geometric series, divide any term by the previous term:

$$r = a_n / a_{(n-1)}$$

How to Prove a Geometric Sequence

To prove a sequence is geometric, show that the ratio of consecutive terms is constant:

$$r = a_n / a_{(n-1)}$$

What is the Sum of Geometric Series?

The sum of a geometric series with n terms is:

$$S_n = a * (1 - r^n) / (1 - r)$$

How to Calculate Sum of Series

To calculate the sum of a series, find the sum of the first n terms and take the limit as n approaches infinity.

What is R in Infinite Geometric Series?

R in an infinite geometric series is the common ratio of the series.

How to Find the n th Term of Infinite Series

To find the n th term of an infinite series, use the formula:

$$a_n = a * r^{(n-1)}$$

How to Solve an Infinite Geometric Series

To solve an infinite geometric series, determine if it converges and find the sum if it converges.

How to Identify a Geometric Series

A geometric series is a series of terms where each term is obtained by multiplying the previous term by a constant ratio.

What is the Formula for the Infinite Geometric Term?

The formula for the infinite geometric term is:

$$a_n = a \cdot r^{(n-1)}$$

What is the Formula for the Geometric Progression of Infinite Series?

The formula for the geometric progression of infinite series is:

$$S = a / (1 - r)$$

How to Solve a Finite Geometric Series

To solve a finite geometric series with n terms, use the formula:

$$S_n = a \cdot (1 - r^n) / (1 - r)$$

What is the Sum to Infinity of Each Geometric Sequence 8 4 2 1?

The sum to infinity of the geometric sequence 8, 4, 2, 1 is:

$$S = a / (1 - r) = 8 / (1 - 1/2) = 16$$

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