



Lecture 21

10/22/2021

Ratio

Test

8/30/2021 near Mather house

Table of Contents

1) Geometric Series Review

2) Ratio Test

3) Examples

4) Worksheet problems

5) HW 19 due Monday

Geometric Series

A series $S = \sum_k a_k$ is geometric if

$$a_{k+1}/a_k = r \quad \text{is constant}$$

If $r < 1$ and a is the first term, then $S = \frac{a}{1 - r}$

Ratio test

If $|a_{k+1}| / |a_k| \rightarrow r < 1$

Then the series $S = \sum_k a_k$ converges.

Which series do converge?

$$\sum_{k=1}^{\infty} \frac{k}{2^k}$$

$$\sum_{k=1}^{\infty} k^2 2^k / k!$$

$$\sum_{k=1}^{\infty} k/3^k$$

$$\sum_{k=1}^{\infty} \ln(k)/k^k$$

D'Alembert

1717-1787



Worksheet

The End