1 10.4: Other Convergence Tests

(Series Convergence Tests continued-what if terms not all positive?)

VI. The Alternating Series Test:

Illustration: Showing that the Alternating Harmonic Series \[ \sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n} \] is convergent:

NOTE that if \( \sum (-1)^n b_n \) is convergent (to a sum \( s \)) by the Alternating Series Test then

Definitions:

Absolutely Convergent Series:

Conditionally Convergent Series (NOT in text!):

Theorem: If \( \sum a_n \) is absolutely convergent, then
VII. The Ratio Test: \[ \sum_{n=1}^{\infty} \frac{(-1)^{n+1}n}{3^n} \]

Guidelines to Applying Convergence Tests:

<table>
<thead>
<tr>
<th>If ( a_n )</th>
<th>Then try using this test</th>
</tr>
</thead>
<tbody>
<tr>
<td>does not ( \rightarrow 0 )</td>
<td></td>
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