1 10.3: The Integral and Comparison Tests

(Series Convergence Tests continued)

II. The Integral Test:

Illustrated "Proof":

Find the values of $p$ for which $\sum_{n=1}^{\infty} \frac{1}{n^p}$ is convergent

(III. The P-Test)

Note that if $\sum_{n=1}^{\infty} a_n$ is convergent (to a sum $s$) by the Integral Test, then:
IV. The Comparison Test:

V. The Limit Comparison Test:

\[ \sum_{n=0}^{\infty} \frac{n}{(n + 2)(n + 3)} \]
On Beyond Average:

Suppose $\sum_{n=1}^{\infty} a_n$ and $\sum_{n=1}^{\infty} b_n$ are series with positive terms and $\lim_{n \to \infty} \frac{a_n}{b_n} = 0$. Circle the true statement(s):

If $\sum_{n=1}^{\infty} b_n$ is convergent, then $\sum_{n=1}^{\infty} a_n$ is convergent.

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There is not enough information.

Show the series $\sum_{n=1}^{\infty} \frac{\ln x}{x^3}$ is convergent. Estimate the maximum possible error when using $s_{10}$ as an approximation for the sum of the series.