

Math 1b. Series—Other Convergence Tests (Alternating Series, Absolute and Conditional Convergence)

Spring 2006

1. Determine the convergence of $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{\sqrt{n}}$.

2. Determine the convergence of $\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{n^2 + 2^n}$.

3. Suppose that $a_n \geq 0$ for all $n \geq 1$. Is it possible for $\sum_{n=1}^{\infty} a_n$ to converge conditionally?

4. For what values of p does the series $\sum_{n=2}^{\infty} (-1)^{n+1} \frac{\ln k}{n^p}$ converge absolutely?

5. For what values of p does the series $\sum_{n=2}^{\infty} (-1)^{n+1} \frac{\ln k}{n^p}$ converge conditionally?

6. Determine the convergence of $1 - \frac{1}{2^3} + \frac{1}{3^2} - \frac{1}{4^3} + \frac{1}{5^2} - \frac{1}{6^3} + \frac{1}{7^2} - \frac{1}{8^3} + \dots$.