

Warm-Up Problems and Lecture Problems

April 11, 2003

1. Determine if the following series converge or diverge. If the series converges, determine if the series converges conditionally or if the series converges absolutely.

(a) $\sum_{n=2}^{\infty} (-1)^n \ln n$

(b) $\sum_{n=2}^{\infty} (-1)^n \frac{1}{\ln n}$

(c) $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n+2}{n^3}$

(d) $\sum_{n=1}^{\infty} (-1)^{n+1} \frac{n+2}{n^2}$

Lecture and homework problems

2. Using the ratio test, determine the radius of convergence and the interval of convergence for the following series:

(a) $\sum_{n=0}^{\infty} 3^n x^n$

(b) $\sum_{n=0}^{\infty} \frac{x^n}{3^n}$

(c) $\sum_{n=1}^{\infty} \frac{x^n}{n3^n}$

(d) $\sum_{n=0}^{\infty} \frac{nx^n}{3^n}$