Supplementary Homework Exercises for Section 11.7: The Ratio Test

Exercises

Answer each of the following questions.

S1. Determine each of the following series converges absolutely, converges conditionally, or diverges.

(a) $\displaystyle\sum_{n=1}^{\infty} \frac{(-10)^n}{n!}$

(b) $\displaystyle\sum_{n=1}^{\infty} \frac{(-1)^{n+1}}{\sqrt[4]{n}}$

(c) $\displaystyle\sum_{n=1}^{\infty} n\left(\frac{2}{3}\right)^n$

(d) $\displaystyle\sum_{n=1}^{\infty} \frac{\sin(4n)}{4^n}$

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

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

(g) $\displaystyle\sum_{n=1}^{\infty} \frac{2\cdot 4\cdot 6\cdots(2n)}{n!}$

S2. Show that $\displaystyle\sum_{n=1}^{\infty} \frac{x^n}{n!}$ converges for all x.

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