

Supplementary Homework Exercises for Section 11.8: Power Series

Exercises

Answer each of the following questions.

S1. Find the radius and interval of convergence.

(a) $\sum_{n=1}^{\infty} \frac{x^n}{\sqrt{n}}$

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

(c) $\sum_{n=1}^{\infty} \frac{10^n x^n}{n^3}$

(d) $\sum_{n=2}^{\infty} \frac{(-1)^n x^n}{4^n \ln n}$

(e) $\sum_{n=0}^{\infty} \frac{(x-2)^n}{n^2 + 1}$

(f) $\sum_{n=0}^{\infty} \frac{(-1)^n (x-3)^n}{2n+1}$

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

(h) $\sum_{n=1}^{\infty} \frac{x^n}{1 \cdot 3 \cdot 5 \cdots (2n-1)}$

S2. Suppose that the radius of convergence of the power series $\sum c_n x^n$ is R . What is radius of convergence of the power series $\sum c_n x^{2n}$?