

Directions: Show all work on a separate sheet of paper for full credit.

1. Find the radius of convergence and the interval of convergence of the series.

(a) $\sum_{n=1}^{\infty} \frac{(-1)^n x^n}{\sqrt[3]{n}}$ $R = 1$, Interval of Conv. is $(-1, 1]$.

(b) $\sum_{n=1}^{\infty} \frac{(-1)^n x^n}{n^2}$ $R = 1$, Interval of Conv. is $[-1, 1]$.

(c) $\sum_{n=1}^{\infty} \frac{x^n}{n!}$ $R = \infty$, Interval of Conv. is $(-\infty, \infty)$

(d) $\sum_{n=1}^{\infty} n^n x^n$ $R = 0$, $I = 0$

(e) $\sum_{n=1}^{\infty} 2^n n^2 x^n$ $R = \frac{1}{2}$, Interval of Conv. is $(-\frac{1}{2}, \frac{1}{2})$

(f) $\sum_{n=1}^{\infty} \frac{(-1)^{n-1}}{n5^n} x^n$ $R = 5$, Interval of Conv. is $(-5, 5]$.

(g) $\sum_{n=0}^{\infty} \frac{(x-2)^n}{n^2+1}$ $R = 1$, Interval of Conv. is $[1, 3]$

(h) $\sum_{n=1}^{\infty} \frac{(2x-1)^n}{5^n \sqrt{n}}$ $R = \frac{5}{2}$. Interval of Conv. is $[-2, 3)$.