

Solutions

Each answer shows the steps, then the **result**.

2.1

- $\left| \frac{x^{n+1}/2^{n+1}}{x^n/2^n} \right| = \frac{|x|}{2}$; set < 1 : $|x| < 2$; $R = 2$

2.2

- $(-2, 2)$

2.3

- The ratio test gives $L = 1$ at the endpoints, so it is inconclusive there

3.1 B

- the ratio test gives the radius

3.2

(a)

- $\left| \frac{(x-1)^{n+1}/(n+1)}{(x-1)^n/n} \right| = |x-1| \cdot \frac{n}{n+1} \rightarrow |x-1| < 1 \Rightarrow R = 1$

(b)

- $x = 2$: $\sum \frac{1}{n}$ diverges; $x = 0$: $\sum \frac{(-1)^n}{n}$ converges

(c)

- $[0, 2)$

3.3

- $\left| \frac{x^{n+1}/(n+1)!}{x^n/n!} \right| = \frac{|x|}{n+1} \rightarrow 0 < 1$ for all x ; $R = \infty$ (converges everywhere)