you should use the ratio test

1. If $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = L < 1$, then the series $\sum_{n=1}^{\infty} a_n$ is absolutely convergent (and therefore convergent).

2. If $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = L > 1$ or $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = \infty$, then the series $\sum_{n=1}^{\infty} a_n$ is divergent.

Remark 1 *If* $\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| = 1$*, the Ratio Test gives no information about the series.*

The series may converge or diverge. Another test must be used in this case.

$\lim_{n\to\infty}\left|\frac{a_{n+1}}{a_n}\right| < 1$

$$a_n = \frac{x^{2k+1}}{k\,(2k+1)} \qquad a_{n+1} = \frac{x^{2(k+1)+1}}{(k+1)\,(2k+1)} = \frac{x^{2k+3}}{(2k+1)\,(k+1)}$$

find the limit and where ever the limit converges the series is convergent
also you should never forget to test the end poin for convergence