

Example 1. For what values of x is the series $\sum_{n=0}^{\infty} \frac{x^n}{n!}$ converges?

Example 2. Find the radius of convergence and interval of convergence of the geometric series $\sum_{n=0}^{\infty} x^n$.

Example 3. For what values of x is the series $\sum_{n=0}^{\infty} nx^n$ converges?

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

Example 4. $\sum_{n=0}^{\infty} n!x^n$.

Example 5. $\sum_{n=0}^{\infty} \frac{x^n}{n2^n}$.

Example 6. $\sum_{n=0}^{\infty} \frac{(-3)^n(x-2)^n}{\sqrt[4]{n}}$.

Example 7. $\sum_{n=0}^{\infty} \frac{n!(x+2)^n}{5^n}$.

Example 8. $\sum_{n=0}^{\infty} \frac{2^n(x-3)^n}{n^2+1}$.

Example 9. $\sum_{n=1}^{\infty} \frac{n(x+4)^n}{n^3-2}$.

Example 10. $\sum_{n=1}^{\infty} \frac{(-2)^n(x-5)^{n+2}}{\sqrt{n}}$.