

Workshop

1 For which values of p does $\sum_{n=1}^{\infty} \frac{1}{n^p}$ converge? For which values of p does $\sum_{n=1}^{\infty} \frac{1}{p^n}$ converge?

2 Use the Maclaurin series for e^x to obtain a power series for the function

$$f(x) = \int_0^x \frac{1 - e^{t^2}}{t} dt.$$

3 By manipulating series that you already know, find Maclaurin series for the following functions.

$$\frac{1}{1+x^3}$$

$$x \sin(2x)$$

$$\frac{\ln(1+x^2)}{x}$$

$$\frac{e^x - e^{-x}}{2}$$

$$e^{3x^2}$$

$$\int_0^x e^{-t^2} dt$$