

Maclaurin Series of $\sin x$

The Maclaurin series of $\sin x$ is

$$\sin x = x - \frac{x^3}{3!} + \frac{x^5}{5!} - \frac{x^7}{7!} + \dots$$

It can be shown that the series converges for all values of x .

We can use this series to estimate numerically the values of $\sin x$. For example, we have

$$\sin(0.5) \approx (0.5) - \frac{(0.5)^3}{3!} + \frac{(0.5)^5}{5!} \approx 0.4794.$$

You can check this with your calculator but be sure to set it in **radians**.

The following graphs illustrate graphically the fact that adding more terms from the Maclaurin series improves the approximation.

