Solve any defined integral numerically using Midpoint rule, Trapezoidal rule and Simpson's rule using mpi. Compare the speed of each numerical method.

- **Midpoint rule**

$$M_n = \sum_{i=1}^{n} f(m_i)\Delta x$$

- **Trapezoidal rule**

$$T_n = \frac{\Delta x}{2}\left(f(x_0) + 2\,f(x_1) + 2\,f(x_2) + \cdots + 2\,f(x_{n-1}) + f(x_n)\right)$$

- **Simpson's rule**

$$S_n = \frac{\Delta x}{3}\left(f(x_0) + 4\,f(x_1) + 2\,f(x_2) + 4\,f(x_3) + 2\,f(x_4) + 4\,f(x_5) + \cdots + 2\,f(x_{n-2}) + 4\,f(x_{n-1}) + f(x_n)\right)$$