IIIT Vadodara
WINTER 2021-2022
MA202 Numerical Techniques
Lab # 8 Numerical Integration

Exercise 1

Consider that you are given a function $f(x) = \dfrac{\sin(\lambda x)}{x}$ whose integration is to be found from $x = -10$ to $x = 10$. Write a program that numerically evaluates such an integral using Trapezoidal Rule, Simpson's 1/3 Rule and Simpson's 3/8 Rule. Find the integral for the values of $\lambda = 0.01, 0.1, 1, 10, 100$, using each of these methods, and comment upon the results obtained.

Exercise 2

Repeat the same exercise as above for $g(x) = \exp(\sin(\lambda x))$, for which the integration limits are $x = 0$ to $x = 5\pi$.