MATH3201 Practical Session
Week 13

Integration
Consider the following integral:

$$\int_0^5 \exp(x)dx$$

(a) Write a Matlab function to implement Trapezoidal rule for any *M* interval.

(b) Write another Matlab function to implement Simpson's rule for any *M* interval.

(c) Write main Matlab code that uses two Matlab functions in (a) and (b) and:

1) Plot approximations for integral for *M* = 2, 4, 8, 16, 32, 64, and 128 intervals using both Trapezoid and Simpson's rules.

2) Plot absolute error for each method over all intervals.

In both plots, indicate Trapezoid approximations with open squares. For Simpson approximations, use open circles. Introduce the symbols as inset. Writes the exact value of the integral in the title of your plot. Label every axis: Area vs Number of intervals; Absolute error vs Number of intervals.