CA Part -II, Lab -1

1. Consider the following integration:

(a) $\int \sqrt{1-x^2}\,dx,$ (b) $\int \frac{dx}{\sqrt{x}},$ (c) $\int \left(\int xy^2\,dx \right) dy$

(i) Calculate the true value of the integration

(ii) Evaluate the integration using Trapezoidal and Simpson's 1/3 rule for different value of interval

(iii) Estimate and tabulate the percentage of true error for every interval (n)

(iv) Find the optimum n for error less than 0.01%

(v) Plot percentage of true error versus step size