DEPARTMENT OF COMPUTER SCIENCES

CSC2912 – Numerical Analysis

Tutorial Sheet III

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1) Given the three points $(x_0, y_0), (x_1, y_1)$ and (x_2, y_2). Derive a formula for $f''(x_1)$, where x_0, x_1 and x_2 are separated by an interval h.
2) Give the following points of the function f

x	0.0	0.2	0.4	0.6	0.8
f(x)	1.00000	1.49182	2.22554	3.32012	4.95303

3) Approximate
   a) $f'(0)\ using\ h = 0.2$
   b) $f'(0)\ using\ h = 0.4$
   c) $f''(0.4)\ using\ h = 0.2$
   d) $f''(0.4)\ using\ h = 0.4$
4) Approximate

$$\int_{0.0}^{0.8} f(x)dx$$

   a) Using the
      i) trapezoidal rule
      ii) Simpson rule
   b) Using the composite
      i) Trapezoidal rule with $n = 4$
      ii) Simpson rule $n = 2$