



BRAC University (Department of Computer Science and Engineering)
CSE 330 (Numerical Methods) for Spring 2024 Semester

Quiz 4 [CO1]

Student ID:

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Section: 08

Full Marks: 10

Duration: 15 minutes

1. a) Find the values for x for the function, $4x^2 e^{(-2x+1)}$ using Newton Raphson Method. The error bound is 4×10^{-2} . Every value should be in 4 significant digits. [4] , $x_0 = 1.5$
b) If the error bound is decreased, will there be more or less iterations? [1]
2. Using this function, $f(x) = x^2 - x - 6 = 0$
 - a) Find the exact roots. [1]
 - b) Find two different $g(x)$ [3]
 - c) Find the lambda, λ of each of the $g(x)$ you constructed in 2(b). State whether its divergent, convergent or super linearly convergent using the roots you found in (a) [1]

Ans-1

(a)

$$x_{k+1} = x_k - \frac{f(x_k)}{f'(x_k)} \quad \text{--- (1)}$$