

Tutorial 5

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- 1) From the following table determine $f'(0.2)$, $f'(0.3)$, $f'(0.4)$ $f'(0.5)$ by using all three formulas for approximating derivative

x	$f(x)$
0.2	2.027 E-1
0.3	3.093 E-1
0.4	4.228 E-1
0.5	5.463 E-1

- 2) Consider the boundary value problem

$$\frac{d^2 y}{dx^2} + 2 \frac{dy}{dx} = 0$$

$$y(0) = 0$$

$$y(1) = 1$$

Take $h = 1/4$

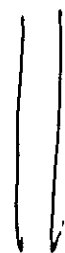
approximate $y(0.25)$ $y(0.5)$ & $y(0.75)$

(3) Find root of $x^2 - 3 = 0$
in $[1, 2]$

(2)

by

- (a) Bisection method
- (b) Regula-Falsi method
- (c) Secant Method
- (d) Newton's Method.



7 iterations

(4) Show $g(x) = \pi + 0.5 \sin\left(\frac{x}{2}\right)$

has a unique fixed point on $[0, 2\pi]$.

Find the unique fixed pt of g .