19 Nisan 2021 Pazartesi

ytubiomed@gmail.com

$$f(x) = e^{2x} - Sin x - x + 2$$

$$X_{-1} = 0.5$$

$$X_{0} = 1$$

find, approximiten root using secont

08:54

$$\times_{(n+1)} = \times_n - \frac{f(x_n)(x_{(n-1)} - x_n)}{f(x_{+1}) - f(x_n)}$$

1 iteration

$$X^{T} = X^{\circ} - \frac{t^{(x^{-1})} - t^{(x^{\circ})}}{t^{(x^{-1})} - t^{(x^{\circ})}}$$

$$X_{1} = 1,134235$$

$$X_{2} = 1.170884$$

$$X_{3} = 1.173486$$

$$X_{4} = 1.173523$$

$$X_{5} = 9$$

$$X_{6} = 9$$

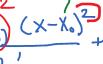
1. Find the second Taylor Polynominal $P_2(x)$ for function $f(x)=xe^x+x$ about $k_0=0$ and use $p_2(0.1)$ to f(0.1). (hint: in the formula \bigcirc for the result, there will be 2 terms that are non-zero.)

B) $2x+x^2$, 0.21(+)

C) x+2x², 0.12 AN

D) $x+x^2$, 0.11

E) $2x+2x^2$, 0.22





$$f(x) = X e^{X} + X$$

$$f'(x) = e^{x} + xe^{x} + 1$$

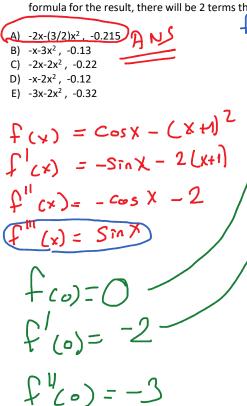
$$\int_{-\infty}^{\infty} (x) = e^{x} + e^{x} x + e^{x}$$

$$H_{\underline{2}}(x) \neq 0 + 2 \times -$$

$$P_{(x)} = 2 \times + x^2$$

$$P_{z}(0,1) = 2.(0,1) + (0.1)^{2}$$

2. Find the second Taylor Polynominal $P_3(x)$ for function $f(x)=\cos x-(x+1)^2$ about $x_0=0$ and use $p_3(0.1)$ to f(0.1). (hint: in the formula for the result, there will be 2 terms that are non-zero.)



that are non-zero.)
$$f(x) = f(x_0) + f(x_0) \cdot (x_0 + x_0) + \frac{f''(x_0 + x_0)^2}{2!}$$

$$f(x) = 0 + -2x + \frac{-3x^2}{2}$$

$$f(x) = -2x - \frac{3x^2}{2}$$

$$f(x_0) = -2(0x) - \frac{3 \cdot (0x)^2}{2}$$

3. Function: f(x)=x-(sinx)/2-3
interval: [3, 4]
error:
starting point:
method: Bisection method
Question: Find approximate Root (Use only 3 iteration)
Hint: The result of the 1st iteration is 3.5. (x₁=3.5, x₃=?).
ANS: 3.125

$$X_1 = \frac{3+4}{2} - \frac{3.5}{2}$$

$$\begin{bmatrix} 3, 3.5 \end{bmatrix}$$

$$X_2 = \frac{3+3.5}{2} = 3.25$$

$$\begin{bmatrix} 3, 3, 25 \end{bmatrix}$$

$$X_3 = \frac{3+3.25}{2} = 3.125$$
RANS

4. Function : $f(x)=e^{x}-x^{2}+3x-2$

interval : [0.25,0.30]

error : starting point :-

method : Bisection method

Question : Find approximate Root (Use only 3 iteration) Hint : The result of the 1st iteration is $0.275 \cdot (x_1=0.275, x_3=?)$.

- A) 0.25625(+)
- B) 0.26875
- C) 0.2875
- D) 0.28125
- E) 0.2625

ytubiomed@gmail.com

5. Function : $f(x)=e^{-x}-\sin x$

interval : [0,1]

error :starting point :-

method : Bisection method

Question: Find approximate Root (Use only 3 iteration) Hint: The result of the 1st iteration is 0.5. $(x_1=0.5, x_3=?)$.

A) _0 625(+)

- B) 0.375
- C) 0.875
- D) 0.125
- E) 0.75

$$X_1 = \frac{0+1}{2} = 0.5$$

C) 0.875

E) 0.75

$$\begin{bmatrix} 0.5 & 1 \\ X_2 = \frac{0.(+1)}{2} = 0.75 \\ [0.5, 0.75] \end{bmatrix}$$

6. Function : $f(x)=e^{-x}-\cos(x)$

interval :

error : error 10^{-3} starting point : x_0 =1.25 method : Newton-Raphson Question : Find approximate Root

Hint : Please do not make more than 3 iterations.

A) 1.2927(+)

B) 1.2835

C) 1.2786

D) 1.2694

E) 1.2548



START: 1040

7. Function : $f(x)=-x^3$ -cosx

interval

error : error 10⁻³ starting point : x₀=-1 method : Newton-Raphson

Question : Find approximate Root

Hint : Please do not make more than 3 iterations.

- A) -0.86547(+)
- B) -0.86712
- רו −ט מעממע י

Homen

- C) -0.86386
- D) -0.86125
- E) -0.86264

8. Function :
$$f(x)=-x^3-\cos x$$

interval :

error :

 $\begin{array}{ll} \text{starting point} & : x_{\text{-}1}\text{=-}1 \text{ and } x_0\text{=}0 \\ \text{method} & : \text{secant method} \end{array}$

method : secant method

Question : Find approximate Root (Use 6 iteration).

Hint : Questions containing more than 3 iterations will not be asked in the exam.

C) -0.8598

D) -0.8832

E) -0.8145

$$x^{T} = x^{0} - \frac{f(x^{0}) - f(x^{0})}{f(x^{0}) (x^{-1} - x^{0})}$$

$$X_{1} = -0.68507$$

 $X_{2} = -1.25708$
 $X_{3} = -0.80721$
 $X_{4} = -0.86777$

9. Function : f(x)=Inx-Cosx

interval

error : error =10⁻³

 $\begin{array}{ll} \text{starting point} & : x_{\text{-}1}\text{=}1 \text{ and } x_0\text{=}1.2 \\ \text{method} & : \text{secant method} \end{array}$

Question : Find approximate Root (Use only 2 iteration)

Hint : The result of the 1st iteration is 1.2999. $(x_1=1.2999, x_2=?)$.

- A) 1.3029(+)
- B) 1.3158
- C) 1.3227
- D) 1.3381
- E) 1.3429

Ragula felsi (6 iteration

$$f(x) = x^{3} = 2x^{2} = 5$$
 [23]
 $a = af(b) = bf(a)$

$$C = \frac{af(b) - bf(a)}{f(b) - f(a)}$$

	x	f(x)
	2	-5
a	3	4
	2,555556	-1,37174
b	2,66905	-0,2338
	2,687326	-0,03632
	2,69014	-0,00556