Assignment: Numerical methods of Algebra.

Gerhon B ROII No. 77.

gs. measured tradius = 12.65 cm potual radius = 12.5 cm

Asca = 7.62 = $92 (12.65)^2 = 502.927$ masured, 7 cm²

Actual Area = TTr2 = 22 (12.5)2 = 491.0714 cm2

7 (1800) (2.0-) + (2010) 30.0)

Absolute 1840r = |302.9279-491.0714)

Relative Error = 11.8465 = [0.0241] 491.0714

Percentage Error = 12.411/.

 $99 \times 9(f(x)) \rightarrow 9(\Delta f(x))$ 4 0.60206 0.1760913.
6 0.7781573

h= 12 - 22 = 14-61= 2

U = 91-90 - 5-4 = = 1/2

mIA le	about the trainment of the
	1. f(x0) + 4 Df(x0)
1095	= 0.60206 + (1/2)(0.1760913)
109	= 0.60206 + -0.08805
	= 0.51401

(b)
$$y(f(x))$$
 $y(f(x))$
4.5 0.6532125 0.8871502
 5.5 0.7403227
 $h = |4.5-5.5| = J.$

$$u = 5 - 4.5 = -0.5$$

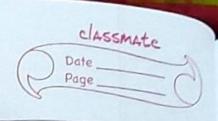
$$log(5) = (0.6532125) + (-0.5)(0.0871502)$$

$$= 0.6532125 - 0.0435751$$

$$= 0.6096874$$

0

Relative Ester : 11. 5465



83	a	1 4(90).	N= X
1	1.5	-6.4375	f(x) = 24 - 2-10
	2	ч	
1		A FIFTH	

$$\overline{x}_1 = 1.5 + 2 = 1.75 \Rightarrow f(x_1) = -2.3721$$

$$\frac{1}{12} = 1.75 + 2 = 1.875 =) f(x_2) = 0.4842$$

$$\overline{\chi}_{3} = 1.875 + 0.75 = 1.8125 \Rightarrow f(\chi_{3}) = -1.0000$$

$$\overline{x}_4 = 1.8125 + 1.875 = 1.84375 =) f(24) = -0.2877$$

Approx Value of x = 1.857375

Equation: f(x) = x3-x-1. Newton ealph method:

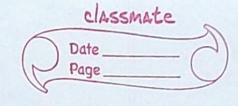
$$f'(n) = 3x^2 - 1$$

94

 $f(\chi_0) = 1$ $f'(\chi_0) = 2.$

$$\chi_{1}=1.5$$
 $f(\chi_{1}) = 0.875$
 $\chi_{1}=1+1/2$

f'(71) - 5.75.



$$n_2 = 1.3478$$
 $n_2 = 1.5 - 0.875$
 $f(n_2) = 0.1006$
 $f'(n_2) = 44497$

$$9(3) = 1.3252$$
 $f(x_3) = 0.0019$
 $f(x_3) = 4.2684$
 $(x_3) = 1.3478 - 0.1806$
 $(x_4) = 1.3478 - 0.1806$

$$94 = 1.3247$$

$$f(x4) = -0.000076$$

$$24 = 1.3252 - 0.0019$$

$$4.2684$$

$$|A| = 3(-6) + 1(-4) + 2(4)$$

= -6-4+8

$$A^{-1} = 1$$
, A .

$$A \cdot B = (8\hat{1} - 9\hat{1}) \cdot B (3\hat{1} - 9\hat{1})$$

$$= (8)(7) + (-9)(-9)$$

$$= 56 + 81$$

A·B2 = 137.

$$COSO = AB = 137$$
 $1A11B1 (12.042)(11.402)$

$$0 = 0.998$$
 $0 = 3.62^{\circ}$

88 Mag. =
$$\int 75^2 + 25^2$$

= $\int 5625 + 625$ = $\int 6250 = 179-857$

PAETA ISTET I - AF

09 101, 104 -- 998

an = a + (n-1) d.

$$998 = 101 + (n-1)3.$$

$$3(n-1) = 998 - 101$$

$$(n-1) = 897$$

$$n-1 = 299 - n = 390$$

$$5n = n \left[2a + (n-1)d \right]$$

Q11
$$(4+3x)^5 = 5(o(4)^5 + 5(1(4)^4(3x) + 5(2(4)^3(3x)^2 + 5(x)^2(3x)^3 + 5(4(4)(3x)^4 + 5(5(3x)^5)^5$$

$$= 1024 + 3840x + 5760x^{2} + 4320x^{3}$$

$$+ 1620x^{4} + 243x^{5}$$

$$[4+3\pi]^{5} = 243 \pi^{5} + 1620 \pi^{4} + 4320 \pi^{3} + 5760 \pi^{2}$$

$$+ 3840 \pi + 1024$$

$$= (2-\lambda)[(3-\lambda)(-5-\lambda)-0] + 3[2(3-\lambda)-0]+0-0$$

$$= (2-\lambda) \left(-15 - 3\lambda + 33 + \lambda^{2} \right) + 3 \left(6 - 2\lambda \right) = 0$$

$$= (2-\lambda) \left[\lambda^3 - 2\lambda - 15 \right] + 3 \left(6 - 2\lambda \right) = 0.$$

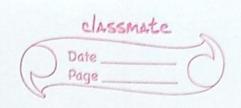
$$= -1^3 + 13\lambda - 12 = 0$$

$$(\lambda - 1)(-\lambda^2 + 12) = 0$$

$$\therefore \lambda = 1 \quad \text{or} \quad \lambda^2 = +12$$

$$\lambda = 1, \sqrt{12}, -\sqrt{12}$$

Thus Eigen Values: 9, \square, -\square



$$g_{13} f(n) = n^3 - 7n^2 + 8n - 3$$

$$f'(n) = 3n^2 - 14n + 8.$$

$$\chi_1 = 6$$
 $\chi_1 = 6$
 $\chi_1 = 6 - (-13) = 6$
 $\chi_1 = 6 - (-13) = 6$

$$[x_9 = 3.72]$$
 $[x_9 = 6 - \frac{9}{32} = 5.72]$

$$814 (1-x+x^2)^2 = (x^2-x+1)^4$$

=
$$(x^2-x)^4+4(x^2-x)^3+6(x^2-x)^2+4(x^2-x)H$$

$$= \left(\frac{18 - 4 x^{7} + 6 x^{6} - 4 x^{5} + x^{4}}{4 \left(x^{6} - 3 x^{5} + 3 x^{4} - x^{3} \right)} + \frac{14 \left(x^{6} - 3 x^{5} + 3 x^{4} - x^{3} \right)}{4 \left(x^{4} - 2 x^{3} + x^{4} \right)}$$

$$= \frac{28 - 4x^{7} + 6x^{6} - 4x^{5} + x^{4} + 4x^{6} - 12x^{5} + 12x^{4}}{-4x^{3} + 6x^{4} - 12x^{3} + 6x^{2} + 4x^{2} - 4x^{4}}$$

$$\frac{11-x+x^2}{9} = x^8 - 4x^7 + 10x^6 - 16x^5 + 19x^4$$

$$-16x^3 + 10x^2 + 10x^2 - 4x + 1$$

Q15
$$e^{-x} = 3log(x)$$

$$e^{-x} - 3\log(x) = 0$$

$$91 = 1$$
 $41 = 0.368$

$$x_2 = 2$$
 , $y_2 = -0.768$

$$91 = 1$$
, $y_1 = 0.368$
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$$y_3^2 = e^{-1.5} - 3109(1.5) = -0.305$$

$$2y = 2/1+1/3 = 1+1/5 = 2.5 = 1.25$$

1+ c11 = 5001+ 5001+ 5001+

1. 11= x + x 3/4 = 36 - 11 30 4 + 10 36 - 110 36 + 11 36 4 + 136 4