



4MM013 - Computational Mathematics

Mathematics Assignment-2

Full Marks: 20

University ID : 2330473

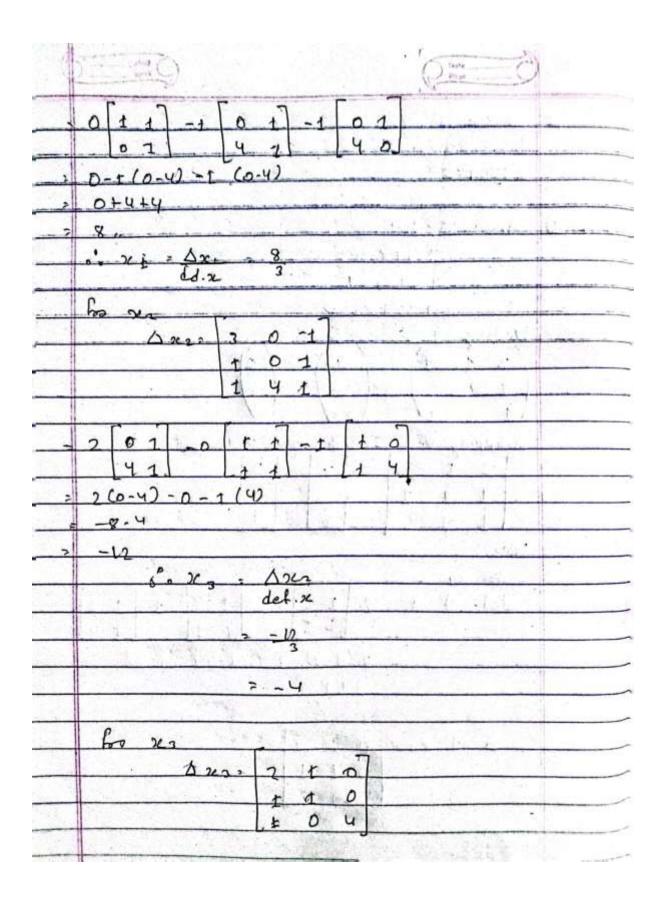
Submitted by : Aman Kumar Sah

Submitted on : 29th of April 2023

1. Using Cramer's rule obtain the solutions to the following set of equations:

$$2 x_1 + x_2 - x_3 = 0$$
$$x_1 + x_3 = 4$$
$$x_1 + x_2 + x_3 = 0$$

	Convas
	Amen Kurner Shah
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	District the second sec
0.40 1)	Criven system
	2x2+x2-x3=D
	7, 1x2°4
	X3+X2+X3=0
OF THE PARTY OF TH	Writing in materix form
	$\begin{pmatrix} 2 & 1 & -1 \\ 1 & 1 & 1 \end{pmatrix}$ $\begin{pmatrix} 2/2 \\ 2 & 1 \end{pmatrix}$
	1 7 D 1 12 17
	Swapping von 2 with vow 3 is get
	2 1 -1 2 0
	1 1 1 1 2 4
	12 0 1 1 141 1 1
	hav,
	det of x:2 11-1 11-1 11
	01 11 10
	2 (1-0) - 1 (1-1) - 1 (0-1)
	= 2 + 1
	÷ 7
	A A x [0 4 4]
in the	0 1 1
CONT.	4 0 1
	•



2.

a) Solve the following using Gauss elimination:

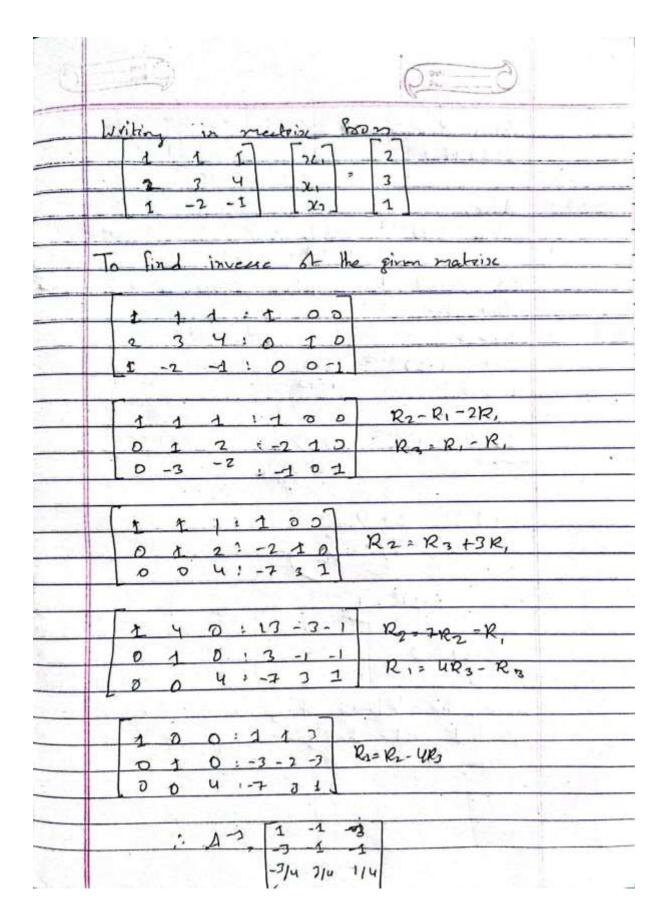
$$x_1 + x_2 + x_3 = 2$$

 $2x_1 + 3x_2 + 4x_3 = 3$
 $x_1 - 2x_2 - x_3 = 1$

	(24/	
2 1 0 -1 1 0	100	1	
104/ 114	1 1	. 0	
2 (4-0) -1 (4-0) +0			
8-4		MARKET MARKET	
Ч			-
1. x3: Ax2 2 4			
			-
0 1 1 1 1 6		9	
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tespectively.			
Anon Kura Sah	7.		
2339473	, Care		
	Mary 1		
D.NO 2. 0) 50 Acres	N 6		
	+ 22 +20 =	3	
	+ 3241 + 423		
262	- 722 - 71	1	
Lositing in rulein	from	241	
[1 1] [26]	[2]	A Land	1
2 3 4 712	2 3		
t -2 -1 1201			
Usking in augmon	ited from	14.1	4
-			-
R2-12-21.	111		-
		1:3	
		1 - 1	

b) Find the inverse of the matrix from (a) using elimination.

(5 = 10)		(V Proje
Ra - Ra - R	11112	
	0 1 2 1-1	Au I
	0 1 2 1-1	1111
R2- R2+1R	1 1 1 2	
	0 1 2 1-1	
2	1 () 1:1 1:	
John Brettur	22+222:-1	
9112: -4	112+2765:-1	the state of the s
10 = -4	20, 7/2+2(-1)=-	
	$0, x_2 - 2x - 2$	
25 , -1	· x2 - 1	
Reg & value	So x, ice and	0(2 Ove
2,1 and -	for x,, x, and 1 vespectively	
Anen' Kuma	r Cah	
2330473		
2030-11-3		24 .
0. NO 2 (b)		
Solm Nov,	(
	+24=2	
	x 1 Ux 3	rgk-
II .	1-26367	6 8 14 7
1		



3. Determine whether the following sequence converges or diverges.

$$t_n = (-1)^{n+1} \, \frac{n+1}{n^2+3}$$

(4)

	6=19
	Jones Ruman Sala
	2338473
D. NO.3	Here.
	$h_n = (-1)^{n+2} \frac{n+2}{n^2+3}$
	In the Sequence converges on diverge
	n->=
	1in (-1)n+1 n+1 n-2+3
	100
	1/m (-1) ^{m+1} 2+2/5- n->= 1+3/2
	(-1 900 1+2/10
	n(1+ 1/2)
	= 6-17° · 1
· .	(-1)-0
	Since, the Volume of glass function is
	Envergent.

4. Find the Maclaurin series expansion of **Sinx**, also calculate the radius of convergence. (4).

	Q==0
	Amon Kumar Sah
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	0. no: 4
	5-17
	let F(x): Sin 2
	for mentions reine be need
	\$(x) - \$(0) + x \$(0) + 212 \$(0) + 23 \$(11/2) + 25 \$(0) +
	.02
	f(0): sin 0 = 0
	£100,00000
	\" (a) = - Sin 0 = 0
	(11 (0) = - (03 0 = 7
	£ 1" (a) = Sin D = D
	f "" (0) = cos 0 = 1
2 1	So, the series will be one
•	$0+\chi_1+\chi^2$ $0+\chi^3$ $(-1)+\chi^4$ $0+\chi^3$ (1)
- >	7-27 +25 -27 + ····
•	
40	
1	

The End