	••
lineau Algebra	0 15 m
Linear Algebra Assignment: 2	
A SSIGNMENT. 2	2.3
Submitted By:	
Fol Cillia (Fond Oct 010)	5 A
Faheem Siddig (FA20-BGS-018)	
Submitted To: A = 8-91 - 13 - 1 - 13 - 13 - 13 - 13 - 13 -	
Mr. Umair Umer	
A debate of the compact	1000
Question: 01	
Determinent:	
The determinant of matrix is a special scolor va	lve
that can be computed from square matrix. It is deno	
or det(A)	nois I
D#16714	
Proporties:	
Properties: again to ded all altre hamige es acc	7533
Properties: Following are some major properties of determinent:	75.8
Following are some major properties of determinent:	1512
	150%
Following are some major properties of determinent:	
Following are some major properties of determinent:	
Following are some major properties of determinent:	
Determinant of identity matrix is always one i.e.  This can be explain by example:	det (I) = 1
Determinant of identity matrix is always one i.e.  This can be explain by example:	det (I) = 1
Determinant of identity matrix is always one i.e.  This can be explain by example:	det (1) = 1
Following are some major properties of determinent:  Output  Determinant of identity matrix is always one i.e.  This can be explain by example:  Gensider identity matrix of an order $2\times 2$ : $T = \begin{bmatrix} 1 & 0 & 1 \\ 0 & 1 \end{bmatrix}$	det (1) = 1
Determinant of identity matrix is always one i.e.  This can be explain by example:	det (I) = 1
Following are some major properties of determinent:  (i)  Determinant of identity matrix is always one i.e.  This can be explain by example:  Genseler identity matrix of an order $2\times 2$ : $I = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ $det(I) = ( x ) - (0x0) = 1$	det (I) = 1
Following are some major properties of determinent:  (i)  Determinant of identity matrix is always one i.e.  This can be explain by example: $I = \{i : 0 : 0 : 1\}$ $I = \{i : 0 : 0 : 0 : 1\}$ $I = \{i : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : $	det (1) = 1
Following are some major properties of determinent:  (i)  Determinant of identity matrix is always one i.e.  This can be explain by example: $T = \begin{bmatrix} 1 & 0 \\ 0 & 1 \end{bmatrix}$ $det(T) = (1x1) - (0x0) = 1$ Consider A be the matrix and its determinant as de	det (1) = 1
Following are some major properties of determinent:  (i)  Determinant of identity matrix is always one i.e.  This can be explain by example: $I = \{i : 0 : 0 : 1\}$ $I = \{i : 0 : 0 : 0 : 1\}$ $I = \{i : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : 0 : $	det (1) = 1

	let a- 5 1 2 1 extent manil
	let A= [ / 2 ] sadall month  Sidnemaping
	W.
$\dashv$	det(A) = 3 - 2 = 1 $: 16 bettimber.$
-	
	Now if we have to find det (2A). Than multiply A by 2
	1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1, 1
	$\frac{\det 2(A) - \left(2 + 4\right) - 12 - 8 - 4 : 0. \text{ lasting of } 2}{2 + 6} = \frac{12 - 8 - 4 : 0. \text{ lasting of } 3}{2}$
	According to the property  det (2A) = 2 det (A)
	det (2A) = 22 det (A)
	= 4(1)=4.
	: lacatoris
	The Schooling of maries of 11) report Scalar Society
	Consider A as a matrix. If A has your Colour equal to Zero
	thon;
	det(A) = 0
	This can be explained with the help of example:
	let in A = by 1 1 th at 217 when and an account
	[0 0]
	A  = 0 - 0 = 0
1	Petroproper 32 identities martin is chipie and he actili
	This our to existing by suggested (VI)
-	let A be the matrix than:
	det (A)= det (A+).
-	Consider example: \ =(0)(0) - (0)(1) = (1)(1)
~ -	winder extilipes.
	$A = \begin{bmatrix} 1 & 2 \end{bmatrix}$ $  A  = 4 - 6 = -2 - (1)$
1	$A = \begin{bmatrix} 1 & 2 \end{bmatrix}  A = \begin{bmatrix} 4 & 6 & -2 & -(1) & $
- 1	E critic of he decided he has obtained at A relation
2.5	

-	
	Since 1 - ii equations are equal thus property (AI = (At exists.
	(v)
	Consider a matrix A. If matrix A has a identical rows and
	Cours than determant of A shall be zero.
_	
	$A = \begin{cases} 1 & 17 & 500 & 400 \\ 1 & 17 & 500 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 17 & 100 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 \\ 1 & 100 & 400 & 400 $
	$A = \left\{ \begin{array}{cccc} I & I & I & I & I & I & I & I & I & I $
	$det  A  = (1 \times 1) - (1 \times 1) = 0$
	(1) - 1) - 200 - 27 = 80x C2 - 6472 - 1(870) 445
	(VI)
	let A be the square matrix, if we interchange it any of
	two rows / colours than its sign for determinant changes i.e
	Let A be the square matrix, if we interchange it any of two rows / coloums than its sign for determinant changes ine
	Let A = [2 4] - 1A1= 18, -24, = -8 - 1
	[68]
	The opening the same that it is a society of
	Now interchanging Ri & Rs
	(1117)
	A= [6 8] IAI = 24-16 = 8 - 11.
	1. 100 - Augustine La Company of the State o
	de land of the Hole Die Report
	Observing eq: T & II -IAI = IAI
_	
_	
_	
-	
-	A STATE OF THE STATE OF A STATE OF STATE OF THE STATE OF

	(VII)
	onsider two square matrix A and B than:
	det(AB) = det(A) det(B)
	(V)
	This can be understood by example;
	Let $A = \begin{cases} 1 & 2 \\ 3 & 4 \end{cases}$ and $B = \begin{cases} 6 & 6 \\ 7 & 8 \end{cases}$
	$\frac{AB}{\det(AB)} = \begin{bmatrix} 19 & 22 \\ 43 & 50 \end{bmatrix}$
	Not Me (1x1) - (1x1) = 0
	det (AB) = 19x50 - 22x43 = 950 - 946 = 4(i)
	(N)
	det(A) = (4x1) = (2x3) = x - 2.
	det(8) = (8x5) - (6x7) = 40 - 42 = -2
	Det ( 0 ) - ( 0 ) ( 0 x 1/2 · 4/0 - 40 = -2
	$- det(A) \times det(B) = 4 - (ii)$
	Section - Section - 4
	As ey is ii are some thus property is satisfied
	SA TO Superior of civil
	(VIII)
and the second	If elements of Yow or coloum are multiplied by non-zero
	constant determinant is multiplied of Same constant. The is
	also known as Scian Multiple Property.
	This can be explained with the help of example:
	let A = [1 2]
	det(A) = 4 - 6 = -2 = i
	Hultiplying 2 with Ri of A: A becomes $A = \begin{bmatrix} 2 & 4 \\ 3 & 4 \end{bmatrix}$
	$ A'  = 8 - 12 = 4 \cdot -11$
	From is ii His clear that IAI = 2/A/ as we multiplied 2 to A row.
	2 to A Tow.

(ix)	, the diagonal
If the clements of determinant above a	or below become zop
accerminant extra product of die	gonal elements. This is
chown as chongolar property.	
a a a a a a	00
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	620 = a,baca
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	b3 C3
Consider motrix A;	
$A = \begin{cases} 1 & 2 & 3 \end{cases} \text{ than } \det(h)$ $0 & 5 & 6 \\ 0 & 0 & 9 \end{cases}$	1) = 1x5x9 = 45 - (i)
056	N V Commence of the Commence o
Finding (A) by normal method to check if	property exist;
1A1 = 1/5 6/ -2/0 6/ 2	3 10 51
109/109/	10 0/
= 1(45-0) -2(0-0)+3	(0*0) = 45-(ii)
Since i & ii are same thus property satifie	ŗ.
(x)	
Consider a matrix A;	
$\left[ a_{1}+b_{1}-c_{1}-d_{1}\right)$	
1 102+62 C2 d2 03+63 C3 d3	
Th(n) / n - n - n - n - n - n - n - n - n - n	ci dil
$\begin{array}{c ccccccccccccccccccccccccccccccccccc$	Ca da
This is known as Sum property.	(3 d)
1.0	
	· · · · · · · · · · · · · · · · · · ·

This can be explain with example let A = 1+4 2  1+6 3
A  = (1+4)3 - 2(1+6) = 15-14 = 1 - 1
Was using property we can also find determinat by
$\begin{bmatrix} 1 & 2 & 1 & 4 & 2 & 1 & 2 & 1 & 2 & 1 & 2 & 1 & 2 & 1 & 1$
[1] 31 [8 3]
As en 1 & 11 are same this this property exists.
the state of the s