

# Mohammad Ali Jinnah University Chartered by Government of Sindh - Recognized by HEC

## **Assignment 4**

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**Id:** FA19-BSSE-0014

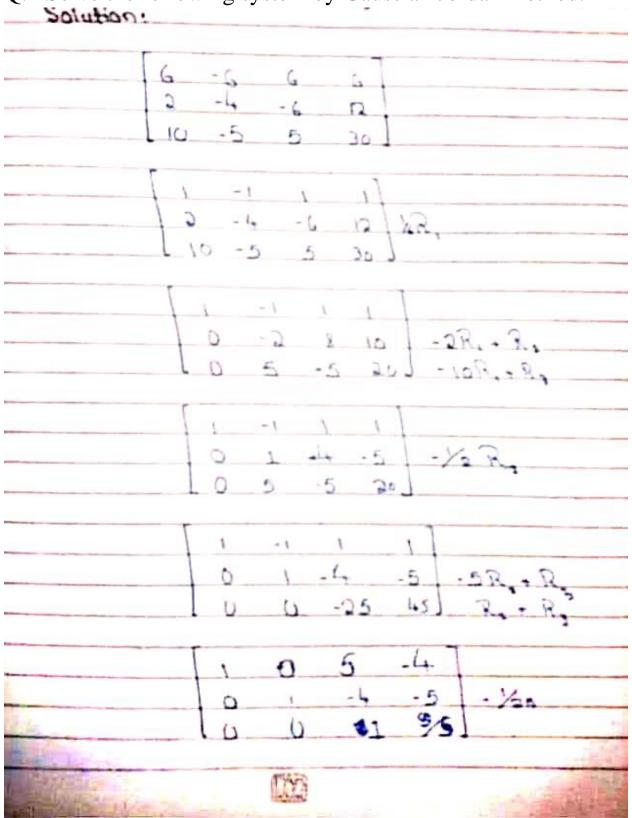
**Subject:** Linear Algebra (Fall 2020)

**Section:** AM

Teacher: Dr. Asmat Ara

Date: Saturday, December 26, 2020

Q.1 Solve the following system by Gaussian Jordan method.



	Date			
105-4				
0 1 5 -5	-4.R3+R			
0 0 1 -9/5	-5 R3+12,			
x, =-1, (i b)				
$\frac{\chi_{-}-1}{\chi_{-}-5} = \frac{1}{1}$ $\frac{\chi_{-}-5}{\chi_{-}-9/5} = \frac{1}{1}$	Unique Solution			
3 = 75 - (111)	Johnson			
Consistency Criteria:				
Rank (AD) = Rank (A)	= No of Un Know			
3 = 3	3			
Unique	re Solution.			

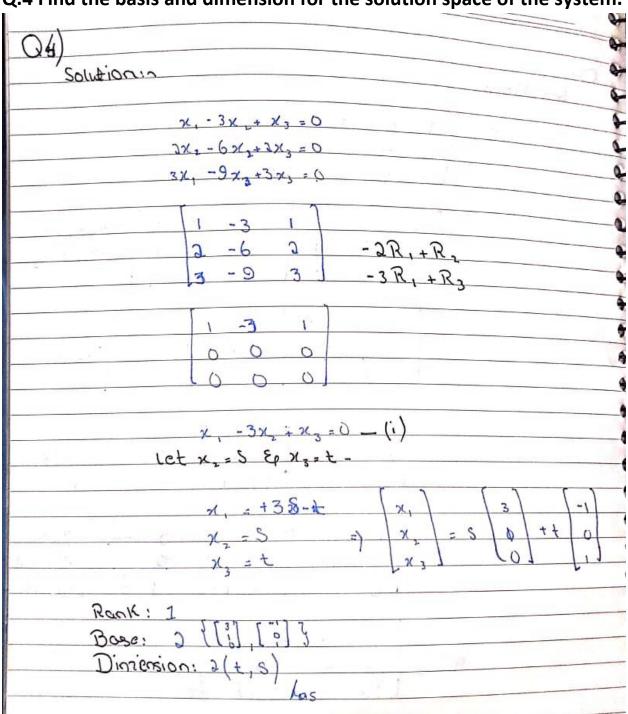
Q.2 Show that. is an idempotent matrix.

)2	
Solution:	
	$P = \begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix}$
	$\begin{bmatrix} 2 & -2 & -4 \\ -1 & 3 & 4 \\ 1 & -2 & -3 \end{bmatrix} \begin{bmatrix} 1 & -2 & -4 \\ 1 & -2 & -3 \end{bmatrix}$
	-4-8+9 2-6+6 -4-8+9 -3+9-8 2+9-8 4+12-13 -4-8+9 2-6+6 -4-8+9
	2 -2 -4 -1 3 4 1 -2 -3
	$b_{i+j} = b_5$ $b_{x+j} = b$
	5, - B
	Hos.

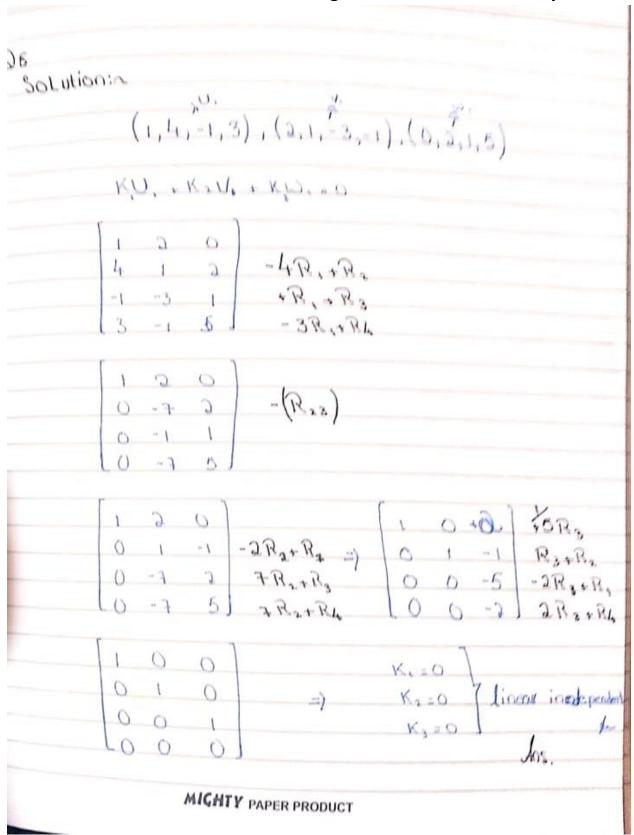
### Q.3 Find the inverse of the following matrix.

Os Solution:			errored, le	and I
Z= 1 0 3 2 4 1 1 3 0		0 0		
0 4	3 5 3	-2 1	0 - 2R	+R2 +R3
0 1	3 5/4 3	1 0	0 /2	+R2
0 0	3 -5/4 3/4	-/3	0 0 74 0 -34 1	-3R2+1
0 1	0	-1/2 .	5 - 6 5/3 3/4 4/3	1/3 R3 -1/5 R -3R3+
A-1 1/3	3 -4	111	: A well	
7/3 -	1 5/3		512 h 1 6 ( ).	

Q.4 Find the basis and dimension for the solution space of the system.



#### Q.5 Determine whether the following vectors in R<sup>4</sup> are linearly



#### iQ.6 Reduced the matrix

iQ.6 Reduced the matr	ix	
=)	1 -1 2 0 4 1 2 1 1 1 0 -1	
=>	0 5 -6	1 -4R + R, 1 -R, + R,
<del>-</del> >	0 1 .%5	0 -4x-1-4+1 1/5 R = 5
=>	0 1 -45	0 1/5 -2R <sub>2</sub> +R <sub>3</sub> -3/5
=>	0 1 -4/3	0 1/5 5/4 R3
<del>=</del> >	0 1 -65	07 1/5 R.E.F
	PAK	Aus