Mohammad Ali Jinnah University

Chartered by Government of Sindh - Recognized by HEC

Quiz 1

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Id: FA19-BSSE-0014

Subject: Linear Algebra (Fall 2020)

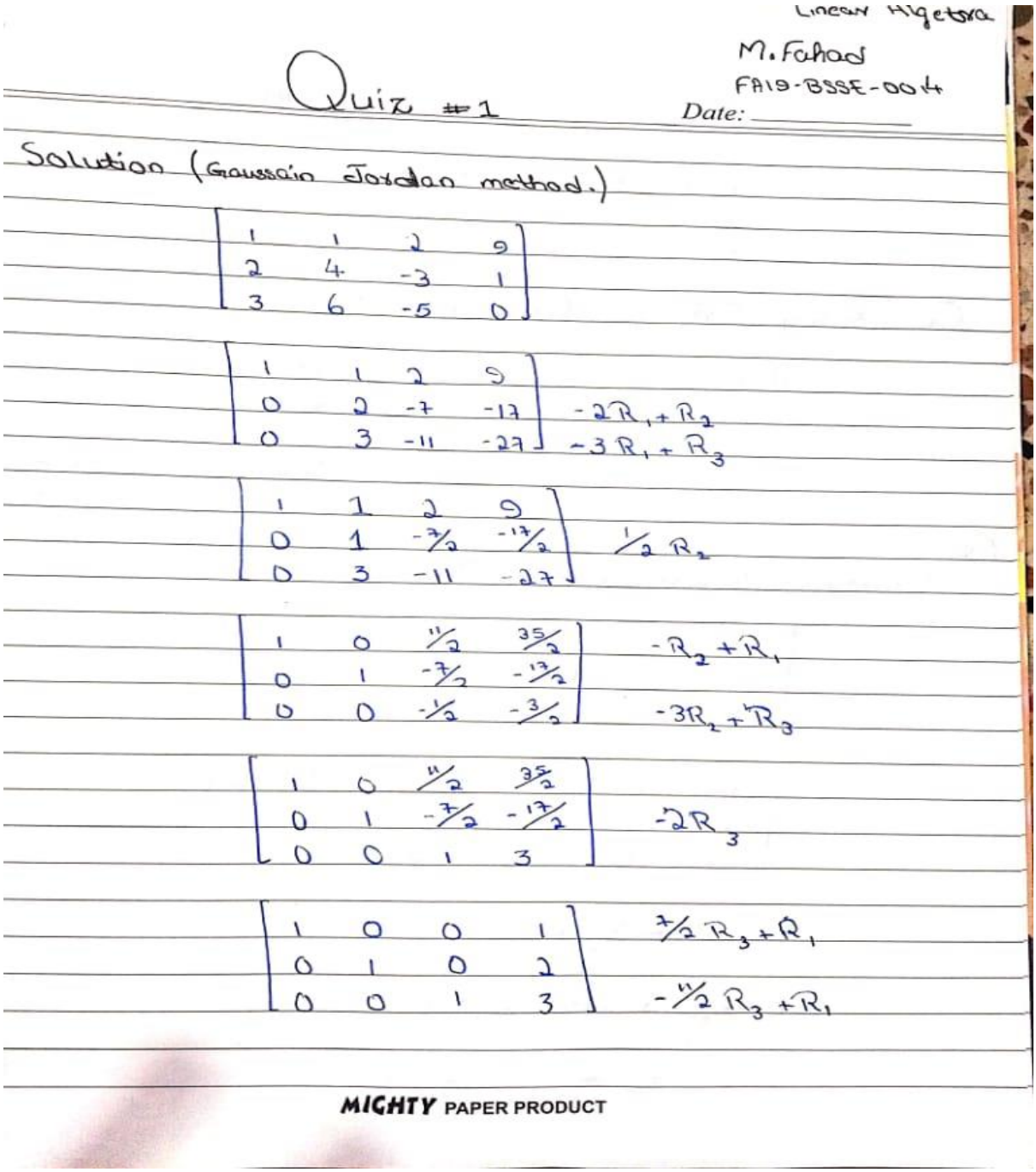
Section: AM

Teacher: Dr. Asmat Ara

Date: Monday, November 2, 2020

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

$$x + y + 2z = 9$$
$$2x + 4y - 3z = 1$$
$$3x + 6y - 5z = 0$$



$x_1 = 1$
$x_2 = 2$
$x_3 = 3$
} Unique Solution.

Consistency Criteria: (Unique Sol)

Rank(AD) = Rank(A) = No of Unknow

3 = 3 = 3

3 = 3

Unique Solution

Q.2 Solve the following system by Gaussian Elimination method.

$$x - y + 2z = 5$$
$$2x - 2y + 4z = 10$$
$$3x - 3y + 6z = 15$$

Q2

Solution: (Gausses Elimination)

$$\begin{bmatrix} 1 & -1 & 2 & 5 \\ 2 & -2 & 4 & 10 \\ 3 & -3 & 6 & 15 \end{bmatrix}$$

$$\begin{bmatrix} 1 & -1 & 2 & 5 \\ 0 & 0 & 0 & 0 \\ 0 & 0 & 0 & 0 \end{bmatrix} \quad -2R_1 + R_2, \quad -3R_1 + R_3$$

$$x_1 - x_2 + 2x_3 = 5$$

Let $x_2 = s$ and $x_3 = t$

$$x_2 = x_2 - 2x_3 + 5$$
$$x_1 = s - 2t + 5$$
$$x_2 = s$$
$$x_3 = t$$

} Infinit solution

Consistency Criteria: (Infinit sol)

Rank(AD) = Rank(A) < No of unknow

1 = 1 < 3

= 1 < 3

Infinit Sol.