NAME:
HABIB ID:

LINEAR ALGEBRA

SPRING 2024

QUIZ 1

Max Marks: 10

Time: 8 minutes

Q. 1 If A and B are two square matrices of the same size, then find the condition such that $(A + B)^2 = A^2 + B^2 + 2\,A\,B$. [4]

Q. 2 Show that if A is an r x s matrix, and $A(BA)$ is defined, then B is an s x r matrix. [6]

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QUIZ 1 L1

Max Marks: 10

Time: 8 minutes

Q. 1 Find the augmented matrix for the following system of linear equations: [3]

$$\begin{aligned} 3x - 2z &= 2 \\ 2x + y - 5z &= -2 \\ -5y + z &= 3 \end{aligned}$$

Q. 2 Let $D = diag(d_1, d_2, \ldots d_m)$, and A is an m x n matrix. By showing appropriate derivation/working, find the rule for pre-multiplication of A by matrix D. [7]

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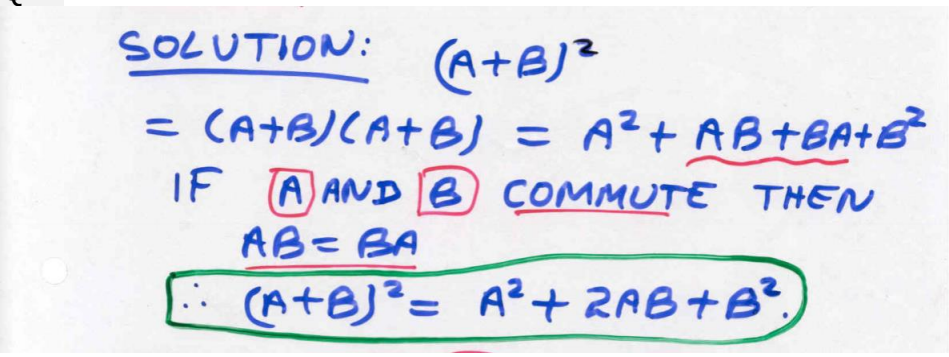
QUIZ 1 SOLUTIONS
VER 1 (1:15 – 2:30)

Q 1



Q 2 For defining A(BA), one should define BA first, and if BA is defined, it means a column of B is equal to rows of A, and as A is r x s, then BA must be t × s. Now for A(BA), number of columns of A (s) should be equal to number of rows BA (t), which means A(BA) must have resulting size r × s. As a result, B is a s x r matrix

VER 2 (3:30 – 4:45)

Q 1 $\begin{bmatrix} 3 & 0 & -2 & 2 \\ 2 & 1 & -5 & -2 \\ 0 & -5 & 1 & 3 \end{bmatrix}$

Q 2