



# National University of Computer & Emerging Sciences Islamabad

FAST School of Computing

Fall-2024

Islamabad Campus

## MT1004 – Linear Algebra

### Homework # 1

#### Question # 1

Find a sequence of elementary row operations that will convert A into B.

$$A = \begin{bmatrix} 2 & 0 & -1 \\ 1 & 1 & 0 \\ -1 & 1 & 1 \end{bmatrix}, \quad B = \begin{bmatrix} 3 & 1 & -1 \\ 3 & 5 & 1 \\ 2 & 2 & 0 \end{bmatrix}$$

#### Question # 2

What condition, if any, must  $a$ ,  $b$ , and  $c$  satisfy for the linear system to be consistent?

$$x + 3y - z = a$$

$$x + y + 2z = b$$

$$2y - 3z = c$$

#### Question # 3

Determine whether the solution of the given system exists.

$$\frac{1}{2}x_1 + x_2 - x_3 - 6x_4 = 2$$

$$\frac{1}{6}x_1 + \frac{1}{2}x_2 - 3x_4 + x_5 = -1$$

$$\frac{1}{3}x_1 - 2x_3 - 4x_5 = 8$$