

# MATLAB

## Tutorial 3

# Q1

$$\begin{bmatrix} 0 & 0 & 0 & 1 & 1 \\ 0 & 0 & 0 & 1 & 1 \\ 1 & 0 & 0 & 0 & 0 \\ 0 & 1 & 0 & 0 & 0 \\ 0 & 0 & 1 & 0 & 0 \\ 0 & 0 & 0 & 1 & 0 \\ 0 & 0 & 0 & 0 & 1 \end{bmatrix}$$

Create this matrix using Matlab build in functions

## Q2

- Write 2 ways to create matrix

A =

$$\begin{bmatrix} 3 & 4 & 5 & 6 & 7 \\ 13 & 14 & 15 & 16 & 17 \end{bmatrix}$$

## Q3

- Solve the following system of linear equations using MATLAB in two different ways.

$$\begin{cases} 2x-3y+4z=5 \\ y+4z+x=10 \\ -2z+3x+4y=0 \end{cases}$$

# Q4

`>> xlabel('t values');`

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**Question 3:**

(A) Write a user-defined MATLAB Function for the following math function:

$$Z(x, y) = e^x \cos y + \sin(x^2 - y)$$

The input to the function are  $x$  and  $y$ , the output is  $Z$ . Write the function such that  $x$  be a vector.

(i) Use the function to calculate  $Z(-3, 4)$  and  $Z(5, -7)$ .

(ii) Use the function to make a 3D plot of the function  $Z(x, y)$  for  $-\pi \leq x \leq \pi$   
 $-\pi \leq y \leq \pi$