الاسم: .... رقم القيد: .... المجموعة: ....

Q1. (6 Marks, 1 each) Tick V**alid** (✔) or **Not Valid** (✗) in front of the following MATLAB commands:

- `A = [2 6]; B = [4 ; 8]; A*B`   (✔)

- `syms x y; M = [x; y^3; x*y; x+y]`   (✔)

- `G = @(a,b) a^2 + b^2; G([2 4],[1 3])`   (✗)

- `a = 12; b = 3; rem(a/b)`   (✗)

- `t = 0:10*pi; subplot(2,2,5); plot(t, sin(t))`   (✗)

- `x = 0:10*pi; stem(x, sin(x))`   (✔)

Q2. (**5 Marks**, **1 each**) **Evaluate** the following MATLAB codes**:**

MATLAB Expression	Evaluation Result
`>> x = [2  4 ; 6  8];` `>> x(3:4)`	`ans =` `4` `8`

`>> a = [ 1 2 3 4 ] ;`
`>> a(3,1:4) = 2`
	`a =`
	   `1` `2` `3` `4`
	   `0` `0` `0` `0`
	   `2` `2` `2` `2`

`>> t = rand;` `>> ceil(t)`	`ans =` `1`
`>> a = [1 2 3 4 ] ;` `>> max(a) + min(4*a)`	`ans =` `8`
`>> t = rand(3,4);` `>> size(t)`	`ans =` `3` `4`

/

CAD Midterm Exam 20%

Time: 30 minutes   **Spring 2022**

الاسم: ....   رقم القيد: ....   المجموعة: ....
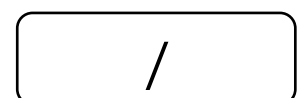
Q3. (**5 Marks**, **1 each**) W**rite** the following Mathematical Expressions into MATLAB Expressions

Mathematical Expression	MATLAB Expression
$x = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$	```x = zeros(2,3)```
$y = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	```y = eye(3)```
$log\ 3x^2$	```syms x``` ```log10(3*x^2)```
$\dfrac{d}{dx} x\ \sin(2\pi x)$	```syms x``` ```diff(x * sin(2*pi*x), x)```
$\displaystyle\int_{-\pi}^{\pi} x \cos\left(x + \dfrac{\pi}{2}\right) dx$	```syms x``` ```int(x * cos(x + pi/2) , x , -pi , pi)```

Q4. (4 Marks) Rewrite the following MATLAB script involving a single **for** statement**:**

```
Clear; clc

n = input('Enter a number: ');

f = 1;

while n > 1

    f = f*n;

    n = n-1;

end

disp(f)
```

```
clear; clc

n = input('Enter a number:  ');

f = 1;

for x = 1:n

    f = f * x;

end

disp(f)
```

Best of luck

/