CAD Midterm Exam 20%

Time: 30 minutes **Spring 2022**

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` **(✓)**
- `n = [1,2,3 ; 4,5,6]; m = [2,2,2]; k = [m  n']` **(✗)**
- `G = @(a,b) a^2 + b^2; G([2 4])` **(✗)**
- `a = 12; b = 3; rem(a,b)` **(✓)**
- `t = 0:10*pi; subplot(1,2,1), plot(t, sin(t))` **(✓)**
- `x = 0:10*pi; scatter(x, sin(x))` **(✓)**

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

MATLAB Expression	Evaluation Result
`>> linspace(10,5,2)`	`ans =` `10  1`

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

`>> t = rand;` `>> floor(t)`	`ans =` `0`
`>> a = [1 2 3 4 ] ;` `>> max(4*a) + min(a)`	`ans =` `17`
`>> t = rand(3,2);` `>> length(t)`	`ans =` `3`

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Q3. (**5 Marks**, **1 each**) **Write** the following Mathematical Expressions into MATLAB Expressions

Mathematical Expression	MATLAB Expression
$x = \begin{bmatrix} 1 & 1 & 1 \\ 1 & 1 & 1 \end{bmatrix}$	`x = ones(2,3)`
$y = \begin{bmatrix} 8 & 1 & 6 \\ 3 & 5 & 7 \\ 4 & 9 & 2 \end{bmatrix}$	`y = magic(3)`
$\ln 3t^2$	`syms t` `log(3*t^2`
$\sin^2\left(\frac{x}{\pi}\right)$	`syms x n` `sin(x/n)^2`
$\int_{-\pi}^{\pi} x \sin(2\pi x)\, dx$	`syms x` `int(x * sin(2*pi*x) , x)`

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

```
clear; clc;
n = input('Enter a number : ');
if n < 0
    disp(' Negative ')
elseif n > 0
    disp(' Positive ')
elseif n == 0
    disp(' Zero ')
end
```

```
clear; clc;
n = input('Enter a number : ');
switch 1
    case n < 0
        disp(' Negative ')
    case n > 0
        disp(' Positive ')
    case n == 0
        disp(' Zero ')
end
```

Best of luck

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