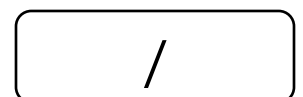


..... الاسم: رقم القيد: المجموعة:

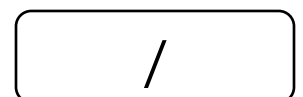
Q1: (5 Marks) Convert the following Mathematical expressions into MATLAB expressions?

Mathematical Expression	MATLAB Expression
$\ln 3x^2$	<code>log (3 * x^2)</code>
$\cos^{-1}(\pi x)$	<code>acos(pi * x)</code>
$\frac{ 2x - 1 }{5x!}$	<code>abs(2*x - 1) / (5 * factorial(x))</code>
$5\sqrt{2} e^{-5i}$	<code>5 * sqrt(2) * exp(-5i)</code>
$10 \geq 5 \ \& \ 15 \neq 7$	<code>10 >= 5 & 15~=7</code>
$x = \begin{bmatrix} 0 & 0 & 0 \\ 0 & 0 & 0 \end{bmatrix}$	<code>x = zeros(2,3)</code>
$y = \begin{bmatrix} 1 & 0 & 0 \\ 0 & 1 & 0 \\ 0 & 0 & 1 \end{bmatrix}$	<code>y = eye(3)</code> <code>y = [1 0 0; 0 1 0; 0 0 1]</code> <code>y = diag([1 1 1])</code>
$\sum_{a=0}^{10} a$	<code>a = 0:10; sum(a)</code>
$\frac{d}{dx} x \cdot \sin(2\pi x)$	<code>syms x; diff(x * sin(2*pi*x))</code>
$\int_{-\pi}^{\pi} x \cdot \cos\left(x + \frac{\pi}{2}\right) dx$	<code>syms x; int(x * cos(x + pi/2), -pi, pi)</code>



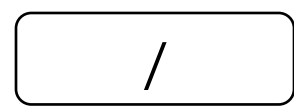
Q2: (5 Marks) Which of the following statements is not valid in MATLAB?

- `clear; y=[2 4 5]; x=[2 ; 2; 2]; y*x` (√)
- `A=[4 , 2 , 1]; B=[1 , -1 , 3]; C=cross(A,B)` (√)
- `f=@(x,y)x^2; f([2 ; 4])` (×)
- `x=[2 4 6; 3 5 7]; reshape(x,3,2)` (√)
- `y=[2 4]; x=[2;2]; y.^x` (√)
- `A=[4 -2 1; 1 1 5; -2 3 -1]; b=[7;10;2]; rref([A ; b])` (×)
- `g=[1,2,3;4,5,6]; h=[2;2;2]'; k=[g;h]` (√)
- `x=[pi ; 2*pi ; 3*pi]; x^(3^2)` (×)
- `sym x,y; diff(x^2 + y^2,y)` (×)
- `x1=[5 5 5]; x2=[8 8 8]; x=[2 * x1 ; x2 - 8]` (√)

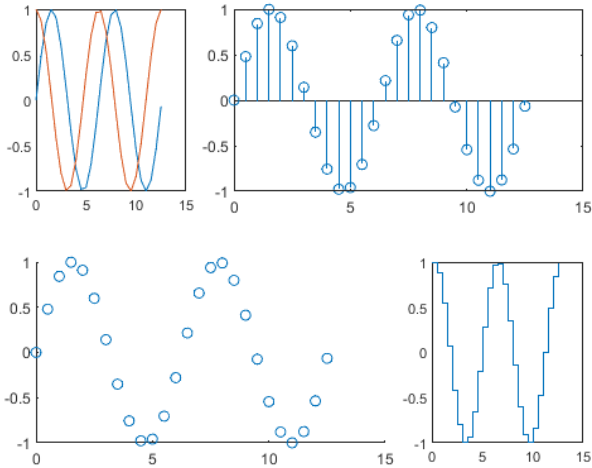


Q3: (5 Marks) Evaluate the following MATLAB statements:

<code>linspace(1,10,10)</code>	ans = 1 2 3 4 5 6 7 8 9 10
<code>ones(2,4)</code>	ans = 1 1 1 1 1 1 1 1
<code>zeros(1,3)</code>	ans = 0 0 0
<code>w=[1 2 ; 3 4]; length(w)</code>	ans = 2
<code>x=[2 4 ;6 8]; x(end-1,2)</code>	ans = 4
<code>a=[1 2 3 4]; max(a)+min(4*a)</code>	ans = 8
<code>s=[1 2 3 4 ; 5 6 7 8]; s(:,3)</code>	ans = 3 7
<code>x=[2 4 ;6 8]; x(2:4)</code>	ans = 6 4 8
<code>k= 0; while k^0.5 < k k = k + 1; end k</code>	k= 0
<code>for i=5:-1:0 for j= 0:i fprintf('%d ', j) end fprintf('\n') end</code>	0 1 2 3 4 5 0 1 2 3 4 0 1 2 3 0 1 2 0 1 0



Q4. A) : (2 Marks) Write a MATLAB code to get the following:



```
clear; close all; clc
t = 0:0.5:4*pi;
figure(1)
subplot(2,3,1)
    plot(t,sin(t),t,cos(t))
subplot(2,3,2:3)
    stem(t,sin(t))
subplot(2,3,4:5)
    scatter(t,sin(t))
subplot(2,3,6)
    stairs(t,cos(t))
```

Q4. B) : (3 Marks) Rewrite the following MATLAB codes without affecting the output:

<pre>if w < x if w > y w = x*y end end</pre>	<pre>% Rewrite using <i>single if statement</i> if (w < x)&(w > y) w = x*y end</pre>
<pre>for m = 0:10 fprintf('2 x %d = %d\n', m, m*2) end</pre>	<pre>% Rewrite using <i>disp()</i> for m = 0:10 disp(['2 x ' num2str(m) ' = ' num2str(m*2)]) end</pre>

Best of luck

