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% ASSIGNMENT-1 by Aditya Singh 2K19/EP/005

% 1. Define a row vector and column vector

a = [5, 9, 18];
b = [3; 8; 2];

% (i) Addition of both the vectors.
add = a+b

% (ii) Subtraction of both the vectors
sub = a-b

% (iii) Multiplication of both the vectors
mult = a*b

% (iv) Division of both the vectors
div = a./b

% (v) Find the size of both the vectors
aSize = size(a)
bSize = size(b)

% (vi) Reference any element of both the vectors
aRef = a(2)
bRef = b(1)

% 2. For a vector x, write down the Matlab/octave command

x = [1 : 0.3 : 4];

% (i) cos x^2 ? sin x^2
m = cos(x.^2);
n = sin(x.^2);
C = m-n

% (ii) e^x(1 + cos 3x)
m = e.^x;
n = 1+cos(3*x);
D = m.*n

% 3. Let u be the row vector defined as [1 2 3 4 5] then write the following commands
u = [1 2 3 4 5];
% (i) Subtract 1 from each element
E = u-1

% (ii) Add 10 to the even-index elements
F = u;
F(2:2:end) = F(2:2:end) + 10

% (iii) Compute the square root of each element
G = sqrt(u)

% (iv) Raise to the power 2 each element
H = u.^2

% 4. Consider two complex numbers as

c1 = -2 + 4*i;
c2 = 6 - 9*i;

% operations on complex numbers
cadd = c1+c2
csub = c1-c2
cmul = c1*c2
cdiv = c1/c2

% 5. Plot the following functions using the linearly spaced vector
x = linspace(0,4*pi)
y = linspace(0,10) %for e^x
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71
72  % (i) cosx
73  I = plot(x,cos(x))
74  title ("cos(x) for x in [0 to 4π]");
75  xlabel ("x");
76  ylabel ("cos(x)");
77
78  % (ii) cosecx
79  J = plot(x,csc(x))
80  title ("cosec(x) for x in [0 to 4π]");
81  xlabel ("x");
82  ylabel ("csc(x)");
83
84  % (iii) tanx
85  K = plot(x,tan(x))
86  title ("tan(x) for x in [0 to 4π]");
87  xlabel ("x");
88  ylabel ("tan(x)");
89
90  % (iv) cotx
91  L = plot(x,cot(x))
92  title ("cot(x) for x in [0 to 4π]");
93  xlabel ("x");
94  ylabel ("cot(x)");
95
96  % (v) e^x
97  M = plot(y,exp(y))
98  title ("e^x for x in [0 to 10]");
99  xlabel ("x");
100 ylabel ("exp(x)");
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