MAT 116E Advanced Scientific and Engineering Computing

Lab-2 / CRN : 12852

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1 Question 1

Evaluate the following functions under given conditions.

a.) Evaluate $y = \dfrac{\sin(x)\cos(\pi x)}{(x^3+1)(x+1)}$ for $x = 1$ and $x = 3$ using 300 points.

b.) Evaluate $y = \dfrac{x^2}{x - \dfrac{1}{x^2}}$ for $x = 2$ and $x = 4$ in steps of 0.15.

2 Question 2

Create a 7x5 matrix A, 7x7 matrix B and 4x7 matrix C using **rand()** command in the interval $[a, b]$ and make the following tasks. (a and b must be read from keyboard.)

a.) Create a symmetric matrix S using matrix B.
$\Big($Symmetric matrix S will be $\frac{1}{2}(B + B^T)$ where B^T is the transpose of $B\Big)$

b.) Assign the third row of B to second column of A.

c.) Create a six elements column vector named **ColVec** that contains elements 2 through 4 of the second row of A and the first, third and fifth elements of third column of B.

d.) Remove the last column of matrix A and set remaining matrix to P.

e.) Create a matrix D whose entries d_{ij} such that $d_{ij} = \dfrac{b_{ij}}{m_{ij}}$ where b_{ij} are the entries of matrix B, m_{ij} are the entries of multiplication of matrix P and C.