

Math105LB - Project 1

Due: February 1

January 30, 2007

Write a main function (**function FirstLastname()**), which can do the following things (put all in the same file):

1. (20 points) Applying the Composite Simpson's rule to approximate $\int_0^1 \sin(2\pi x) dx$ using data points $x_i = (i-1)/200$ and $i = 1, 2, \dots, 201$. (Using sum and display the result(Hint: display)).
2. Initialize matrix $A = [3, 1, 2; 0, -5, -3; 2, 1, -3]$ and a column vector b with ones(3,1).
 - (1) (25 points) Call DirectSolverPLU(call BackwardSubstitution and ForwardSubstitution) to solve $Ax = b$, display the solution x , check the answer (Hint: display $\max(A*x-b)$).
 - (2) (25 points) Call DirectSolverQR(call BackwardSubstitution) to solve $Ax = b$, display the solution x , check the answer (Hint: display $\max(A*x-b)$).
 - (3) (30 points) Call Jacobi (Jacobi iterative method) to solve $Ax = b$ iteratively, display the solution x .