Problem in Project1 : Solving for the bounded energy levels of a N-square well potential system

Grading system:

a) 75% for Content & Results (Required derivation, numerical solutions, etc.);
b) 15% for Presentations (Graph labelling, Number of data points, etc.);
c) 10% for Code efficiency (Choice of methods, algorithm, etc.)

Results(12pt):

Part1 - single well (4pt)

(2 pt) derive f(E) - to show the understanding of propagator method
(2 pt) showing the results match numerically or analytically

Part2 - double well (5pt)

Results:
(2pt) solve for all bounded energies at at least barrier width

	E1-E7
at least 1 set of s value	2pt

-1 pt for not listing all energies

(2pt) plot E1-E2 vs s (or equivalent)

Observation:
(1pt) delta E decreases as s increases

Part3 - N-well (3pt)

Results:
(2pt) show evidence for band structure

Observations:
(1pt) splitting energy decreases as N increases / number of nearby energy levels = N / energy band structure as N -> infinity

Presentation (15pt):

10pt	Just codes & numbers
15pt	Complete report with description

minus 1 point for any bad presentation, unless no more point is left to be deducted

Efficiency (10pt):

1. Level of root-finding function

2.5pt	only checking existence of root globally
5pt	any root finding function that requires initial guess
(Bonus +1 for effort)	Hybrid Bisection/Quadratic

2. Algorithm to get the N-well propagator matrix

5pt	for i=1:N
(Bonus +1 for effort)	for i=1:m , where m~log2(N)