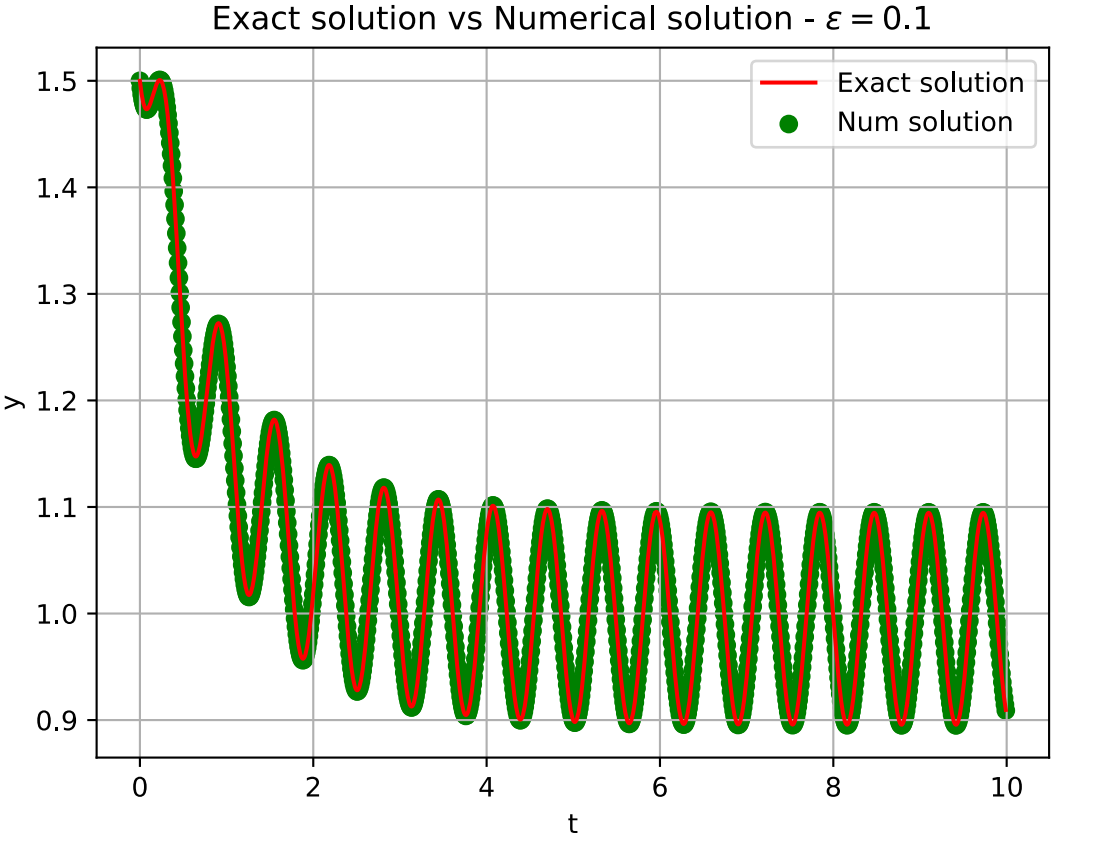
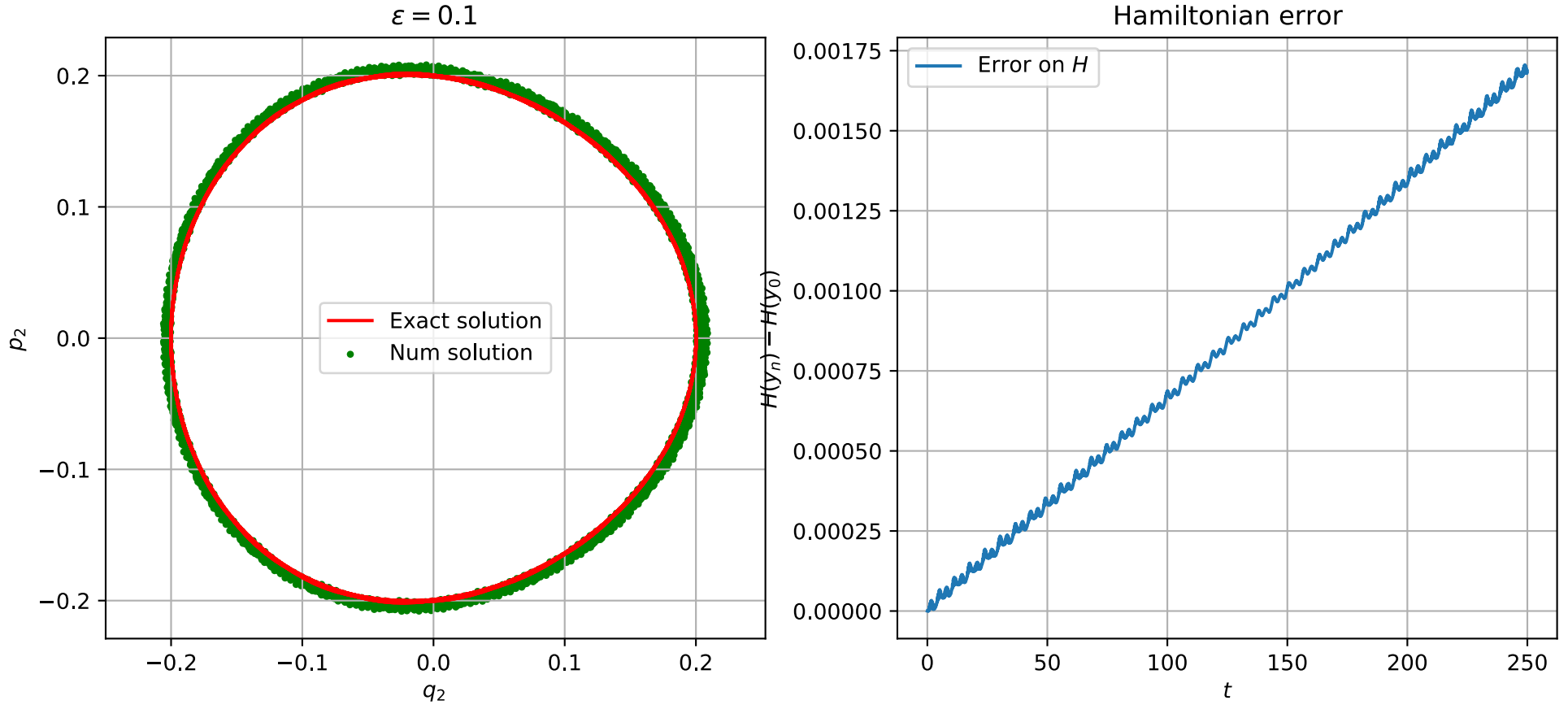
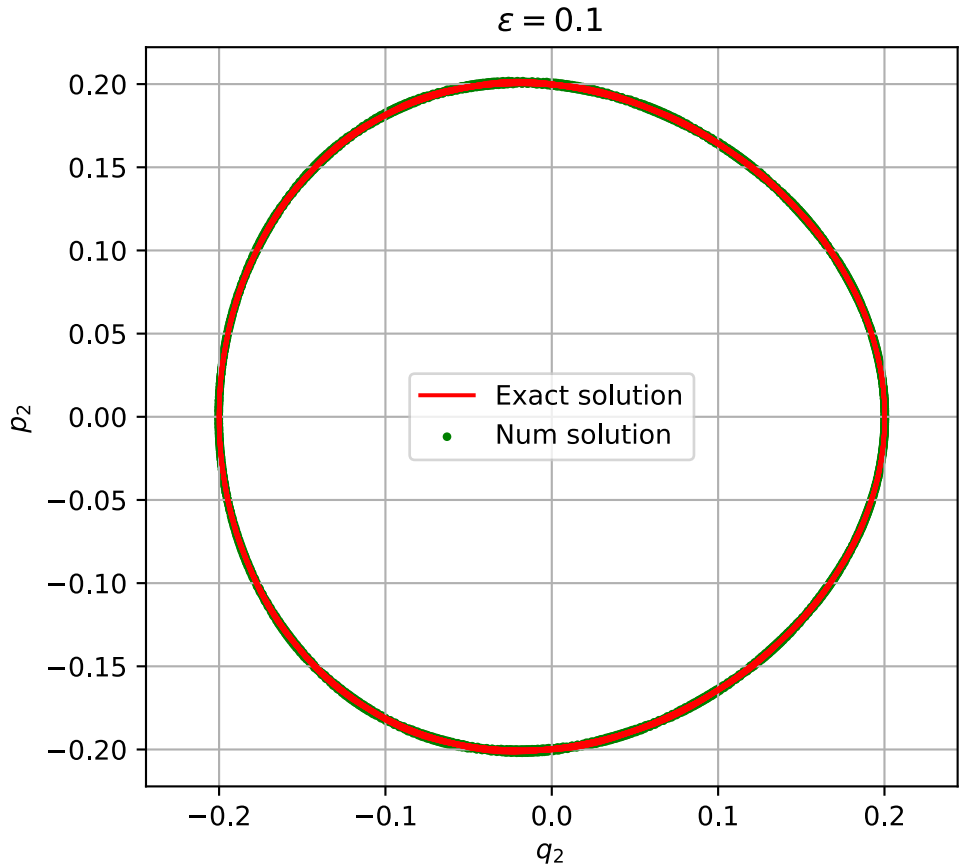
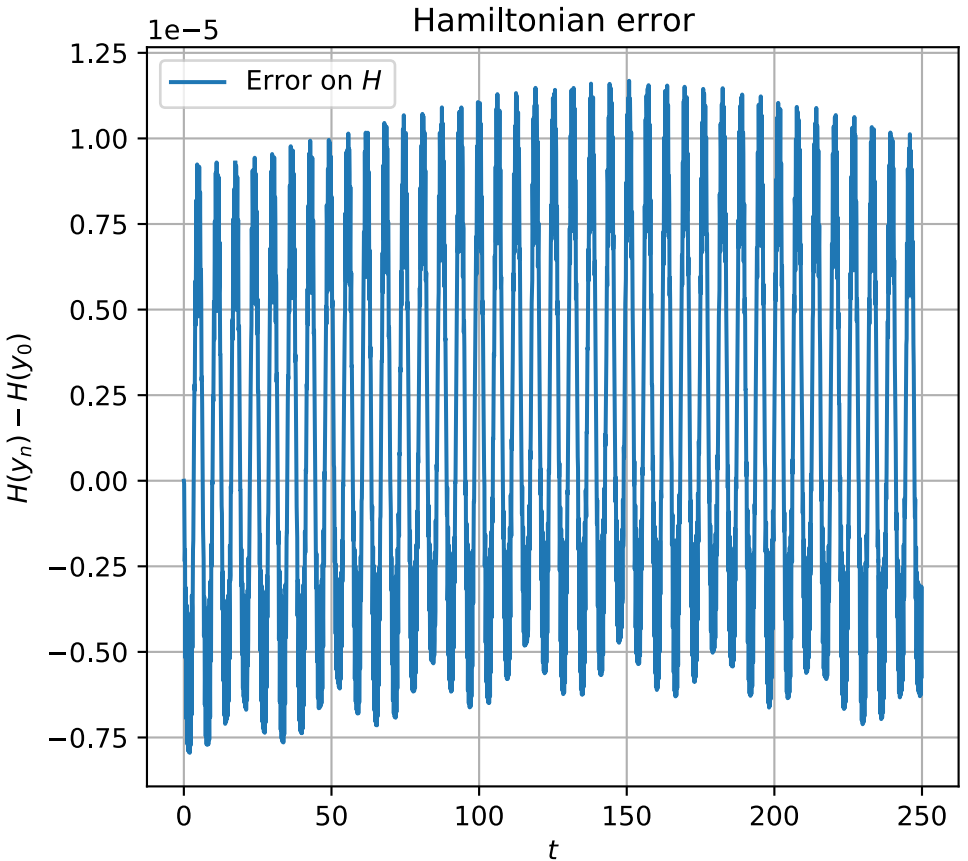
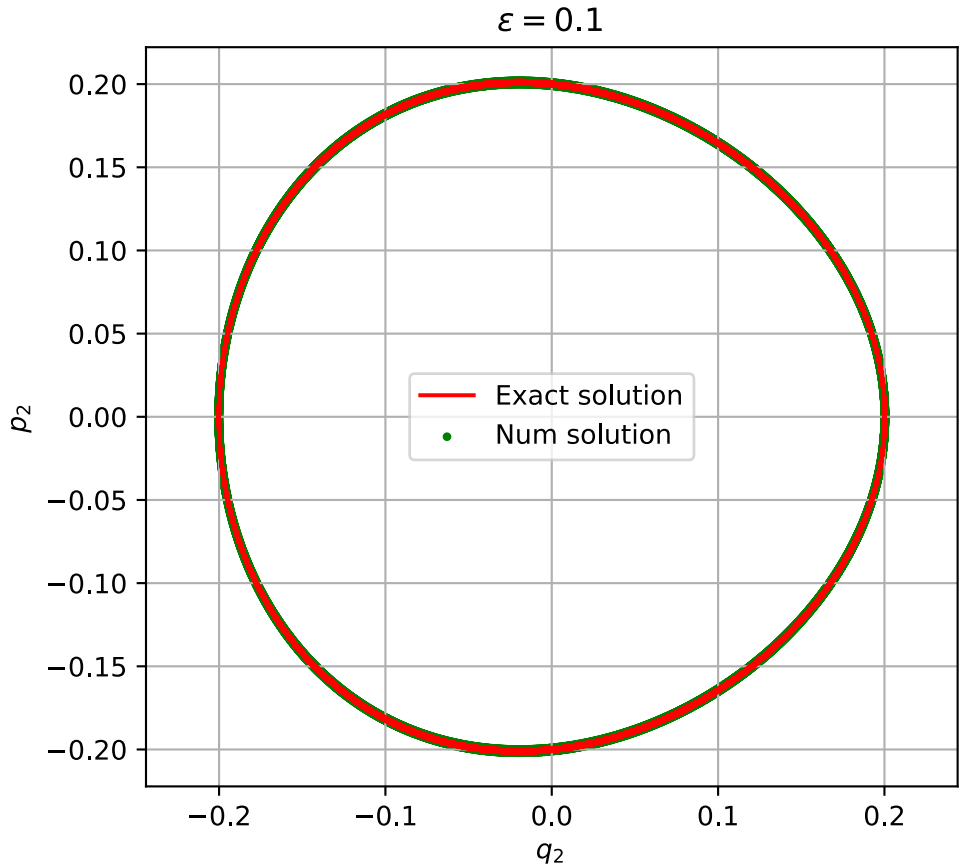
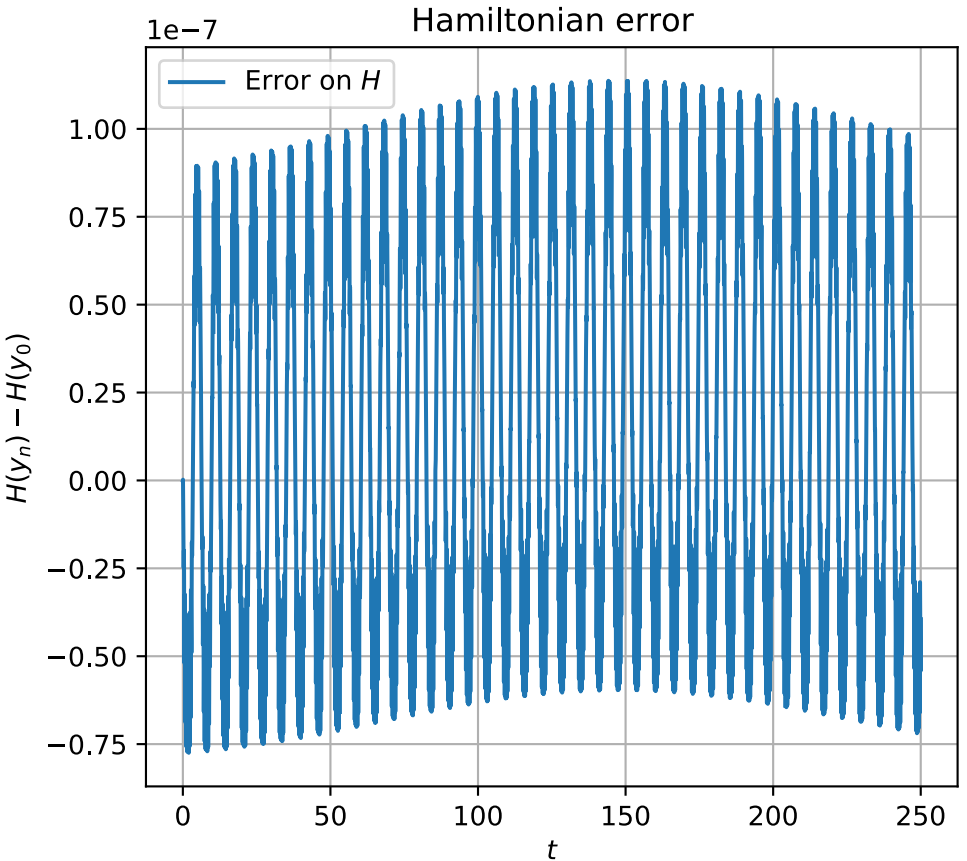

Exact solution vs Numerical solution - $\varepsilon = 0.1$
Exact solution
Num solution
y
t
1.5
1.4
1.3
1.2
1.1
1.0
0.9
0
2
4
6
8
10


$\varepsilon = 0.1$
Exact solution
Num solution
p_2
q_2
0.2
0.1
0.0
−0.1
−0.2
−0.2
−0.1
0.0
0.1
0.2
Hamiltonian error
Error on H
$H(y_n) - H(y_0)$
t
0.00175
0.00150
0.00125
0.00100
0.00075
0.00050
0.00025
0.00000
0
50
100
150
200
250


$\varepsilon = 0.1$
Exact solution
Num solution
p_2
q_2
0.20
0.15
0.10
0.05
0.00
−0.05
−0.10
−0.15
−0.20
−0.2
−0.1
0.0
0.1
0.2


Hamiltonian error
1e−5
Error on H
$H(y_n) - H(y_0)$
t
1.25
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
0
50
100
150
200
250


$\varepsilon = 0.1$
Exact solution
Num solution
p_2
q_2
0.20
0.15
0.10
0.05
0.00
−0.05
−0.10
−0.15
−0.20
−0.2
−0.1
0.0
0.1
0.2


Hamiltonian error
1e−7
Error on H
$H(y_n) - H(y_0)$
t
1.00
0.75
0.50
0.25
0.00
−0.25
−0.50
−0.75
0
50
100
150
200
250