

Prashant Chouhan

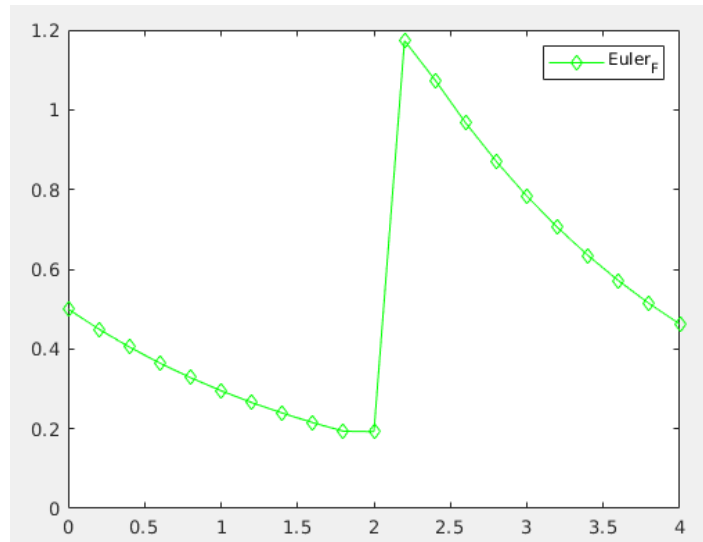
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Section-6

**Problem - 1**

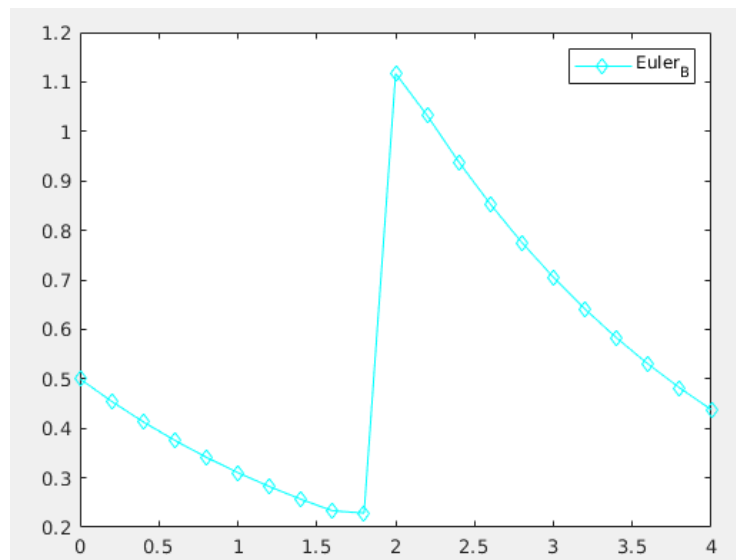
# Eular Forward

x	y_euler
0.00000	0.50000
0.20000	0.45000
0.40000	0.40500
0.60000	0.36450
0.80000	0.32805
1.00000	0.29525
1.20000	0.26572
1.40000	0.23915
1.60000	0.21523
1.80000	0.19371
2.00000	0.19265
2.20000	1.17339
2.40000	1.07437
2.60000	0.96693
2.80000	0.87024
3.00000	0.78321
3.20000	0.70489
3.40000	0.63440
3.60000	0.57096
3.80000	0.51387
4.00000	0.46248



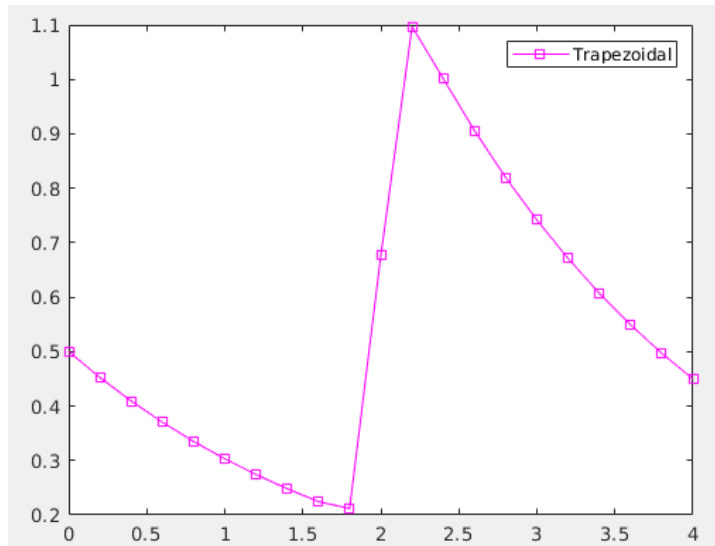
# Eular backward

x	y_euler
0.00000	0.50000
0.20000	0.45455
0.40000	0.41322
0.60000	0.37566
0.80000	0.34151
1.00000	0.31046
1.20000	0.28224
1.40000	0.25658
1.60000	0.23325
1.80000	0.22870
2.00000	1.11700
2.20000	1.03210
2.40000	0.93828
2.60000	0.85298
2.80000	0.77544
3.00000	0.70494
3.20000	0.64086
3.40000	0.58260
3.60000	0.52963
3.80000	0.48148
4.00000	0.43771



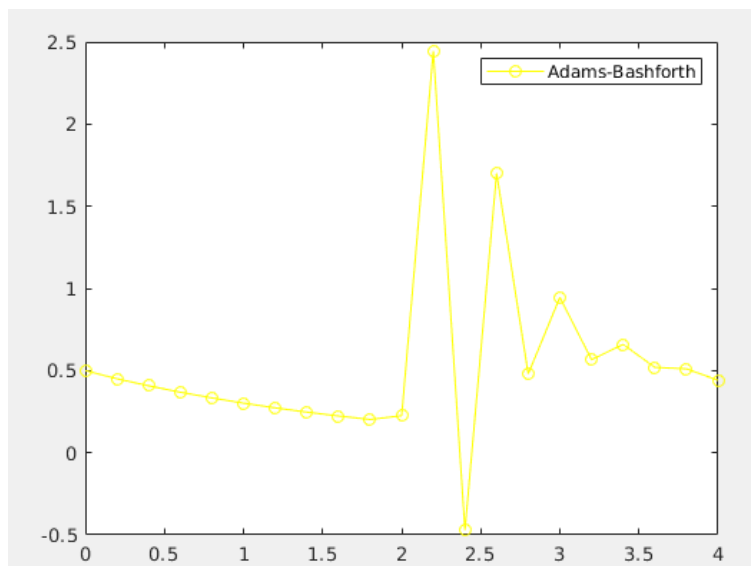
# Trapezoidal

```
x      y_Trapezoidal
0.00000 0.50000
0.20000 0.45238
0.40000 0.40930
0.60000 0.37032
0.80000 0.33505
1.00000 0.30314
1.20000 0.27427
1.40000 0.24815
1.60000 0.22451
1.80000 0.21185
2.00000 0.67659
2.20000 1.09706
2.40000 1.00130
2.60000 0.90594
2.80000 0.81966
3.00000 0.74160
3.20000 0.67097
3.40000 0.60707
3.60000 0.54925
3.80000 0.49694
4.00000 0.44961
```



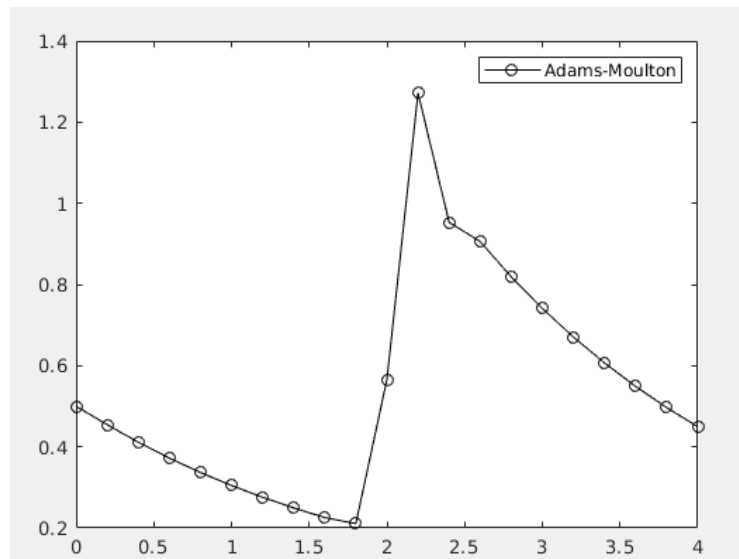
# Adam BashFoth 4th order

```
x      y_AdamsBashforth
0.00000 0.50000
0.20000 0.45000
0.40000 0.40750
0.60000 0.36856
0.80000 0.33365
1.00000 0.30185
1.20000 0.27316
1.40000 0.24715
1.60000 0.22364
1.80000 0.20235
2.00000 0.22507
2.20000 2.44467
2.40000 -0.47117
2.60000 1.70045
2.80000 0.47972
3.00000 0.94526
3.20000 0.56675
3.40000 0.65905
3.60000 0.51961
3.80000 0.51062
4.00000 0.44099
```



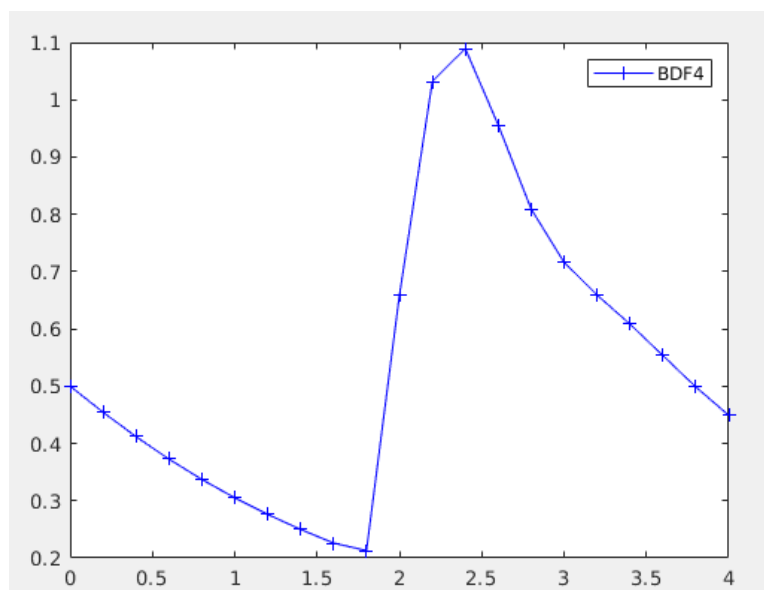
# Adam Moulton 4th order

x	y Adams-Moulton
0.00000	0.50000
0.20000	0.45455
0.40000	0.41127
0.60000	0.37214
0.80000	0.33673
1.00000	0.30469
1.20000	0.27569
1.40000	0.24946
1.60000	0.22572
1.80000	0.21086
2.00000	0.56610
2.20000	1.27176
2.40000	0.95318
2.60000	0.90574
2.80000	0.81866
3.00000	0.74096
3.20000	0.67044
3.40000	0.60664
3.60000	0.54891
3.80000	0.49668
4.00000	0.44941



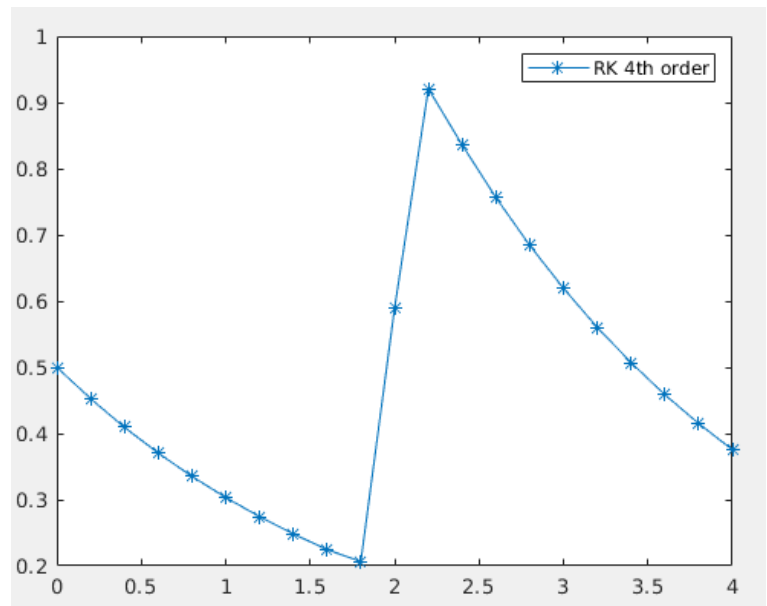
# BDF 4th order

x	y BDF4
0.00000	0.50000
0.20000	0.45455
0.40000	0.41193
0.60000	0.37275
0.80000	0.33721
1.00000	0.30514
1.20000	0.27615
1.40000	0.24990
1.60000	0.22612
1.80000	0.21299
2.00000	0.65851
2.20000	1.03164
2.40000	1.08938
2.60000	0.95605
2.80000	0.80928
3.00000	0.71615
3.20000	0.65914
3.40000	0.60832
3.60000	0.55346
3.80000	0.49864
4.00000	0.44908

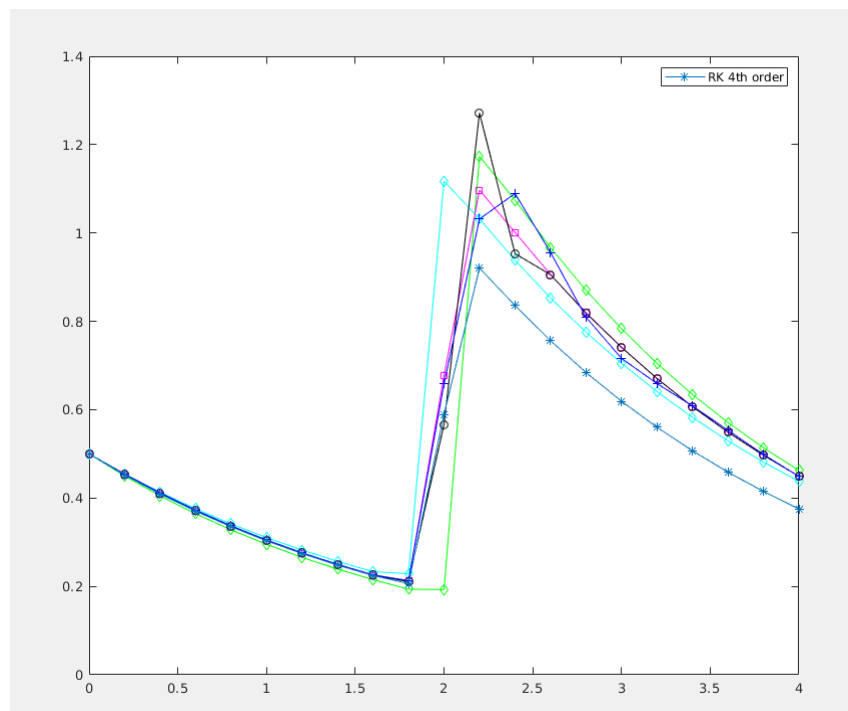


# Runge Kutta 4th order

x	y_RK4
0.00000	0.50000
0.20000	0.45242
0.40000	0.40937
0.60000	0.37041
0.80000	0.33516
1.00000	0.30327
1.20000	0.27441
1.40000	0.24829
1.60000	0.22466
1.80000	0.20642
2.00000	0.58950
2.20000	0.92054
2.40000	0.83578
2.60000	0.75625
2.80000	0.68428
3.00000	0.61916
3.20000	0.56024
3.40000	0.50693
3.60000	0.45869
3.80000	0.41504
4.00000	0.37554



## All Graphs



Prashant Chouhan

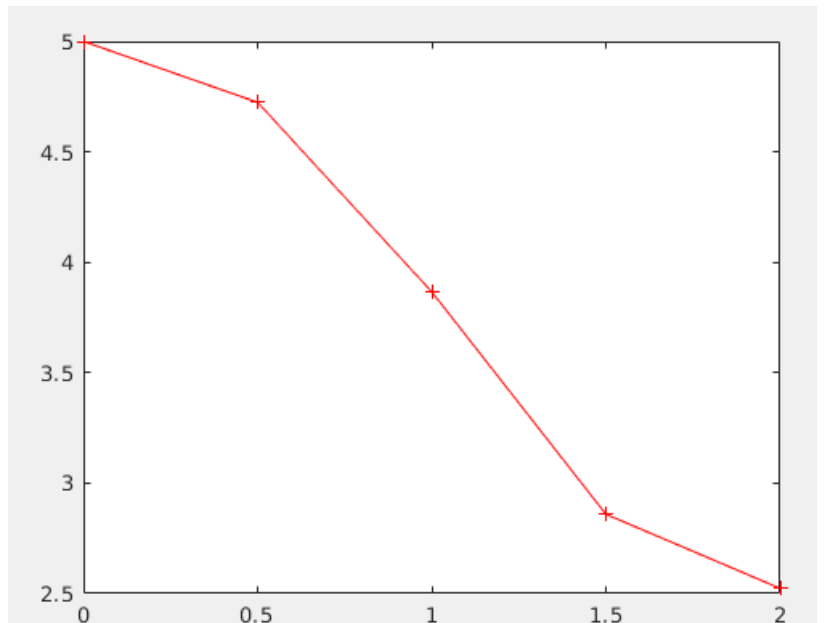
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Problem - 2

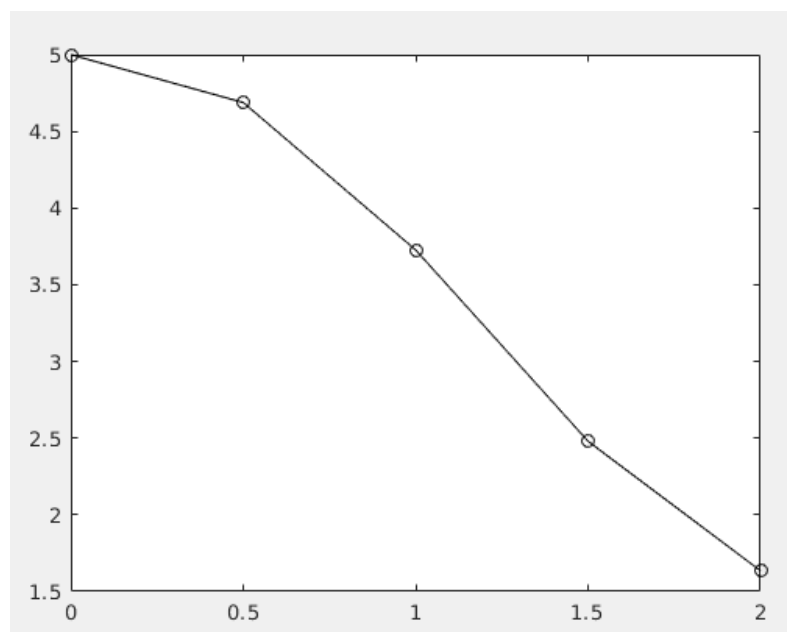
# 2nd order Backward Diff

x	Temp
0.00000	5.00000
0.50000	4.72397
1.00000	3.86602
1.50000	2.85917
2.00000	2.52355



# Central Diff - Ghost Node

x	Temp
0.00000	5.00000
0.50000	4.68793
1.00000	3.72667
1.50000	2.47955
2.00000	1.63474



# Combined Graph

red - x Backward Diff  
Black - o GhoshNode

