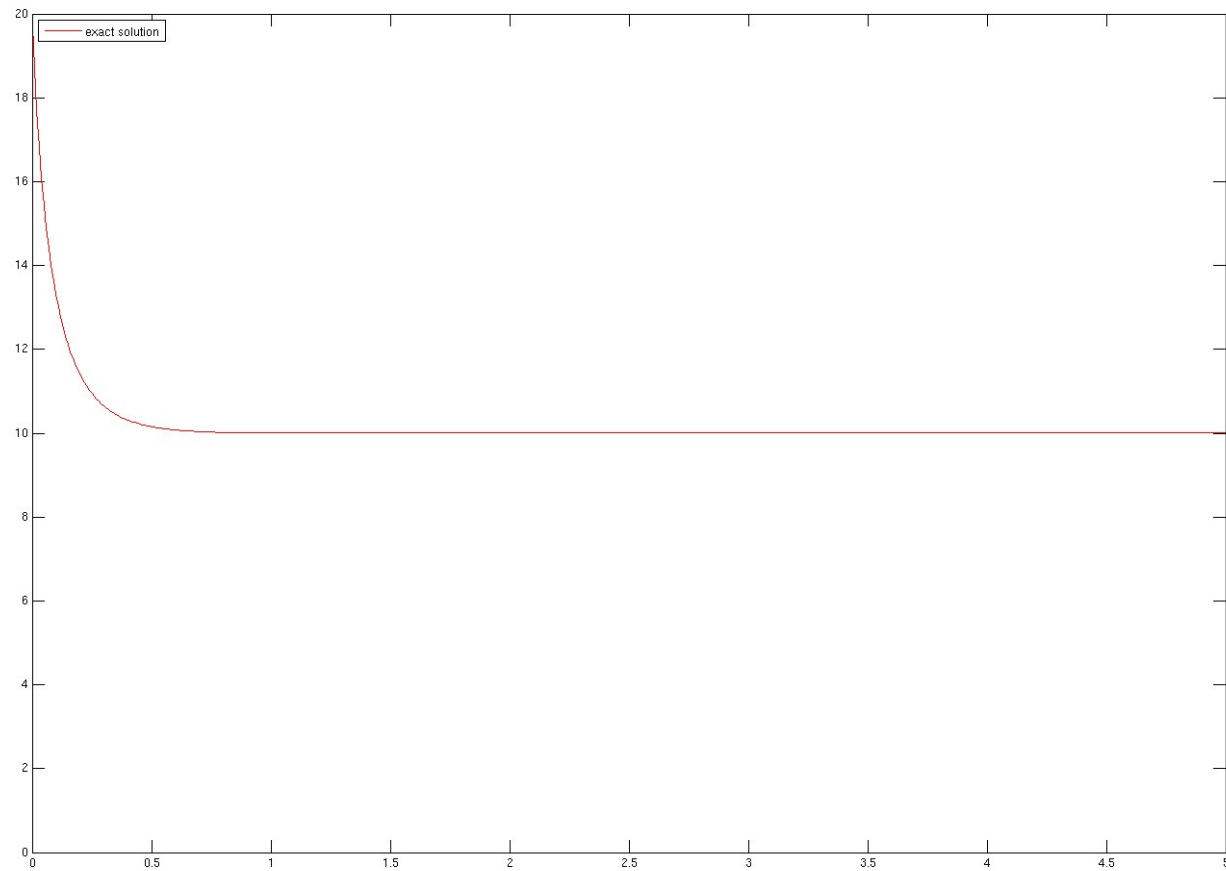


Scientific Computing Lab

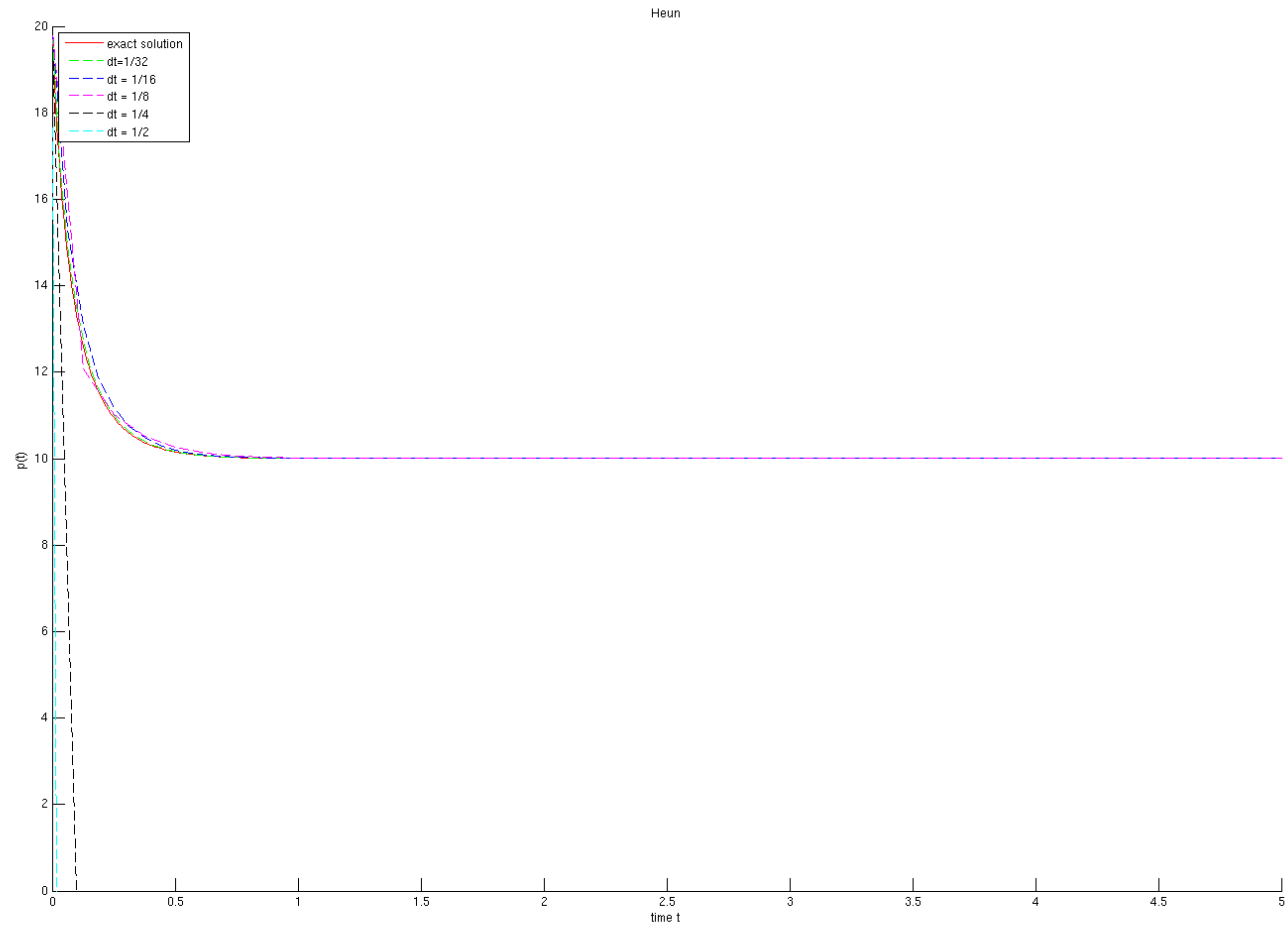
Results Worksheet 2

Tobias Neckel

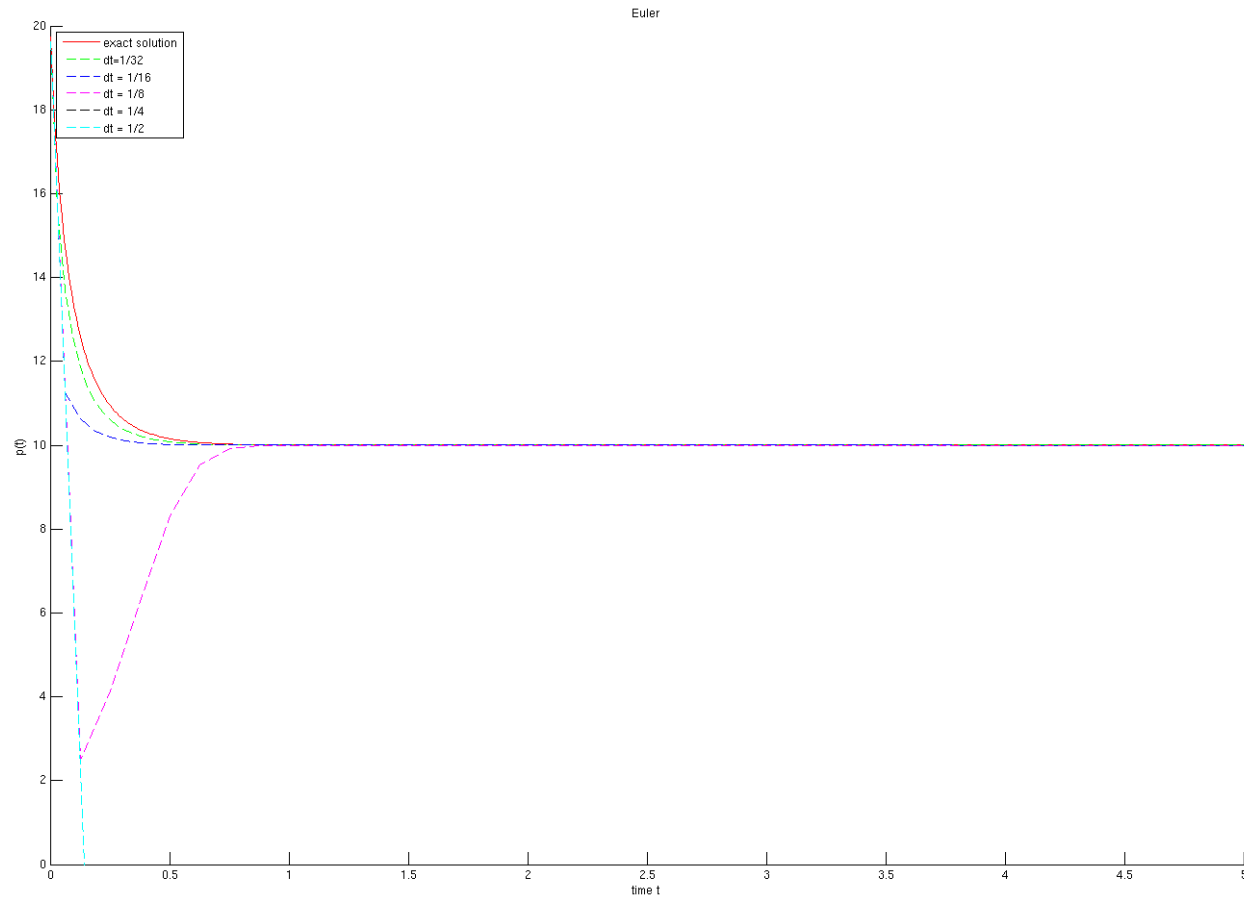
Worksheet 2 – Solution



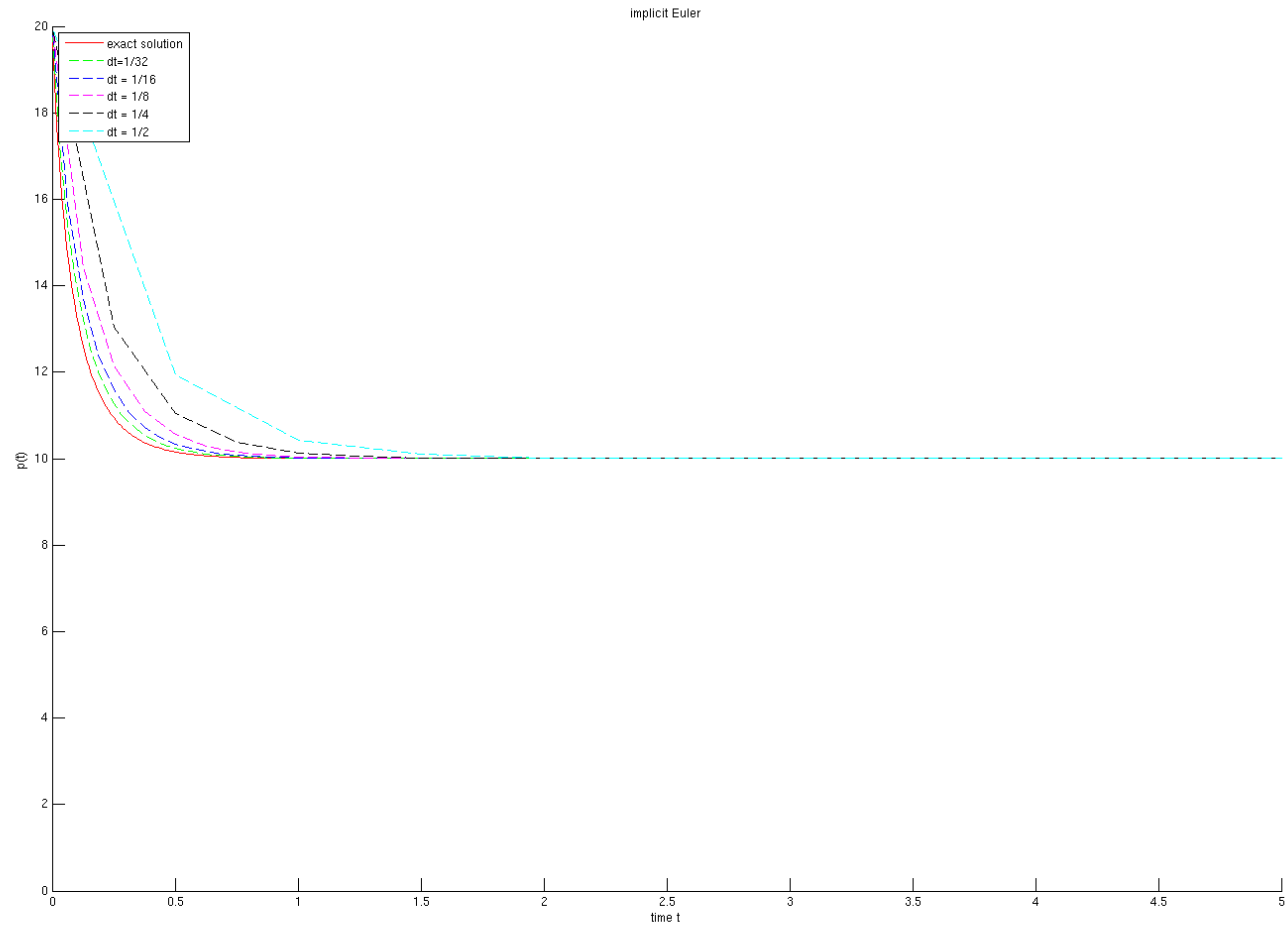
Worksheet 2 – Solution



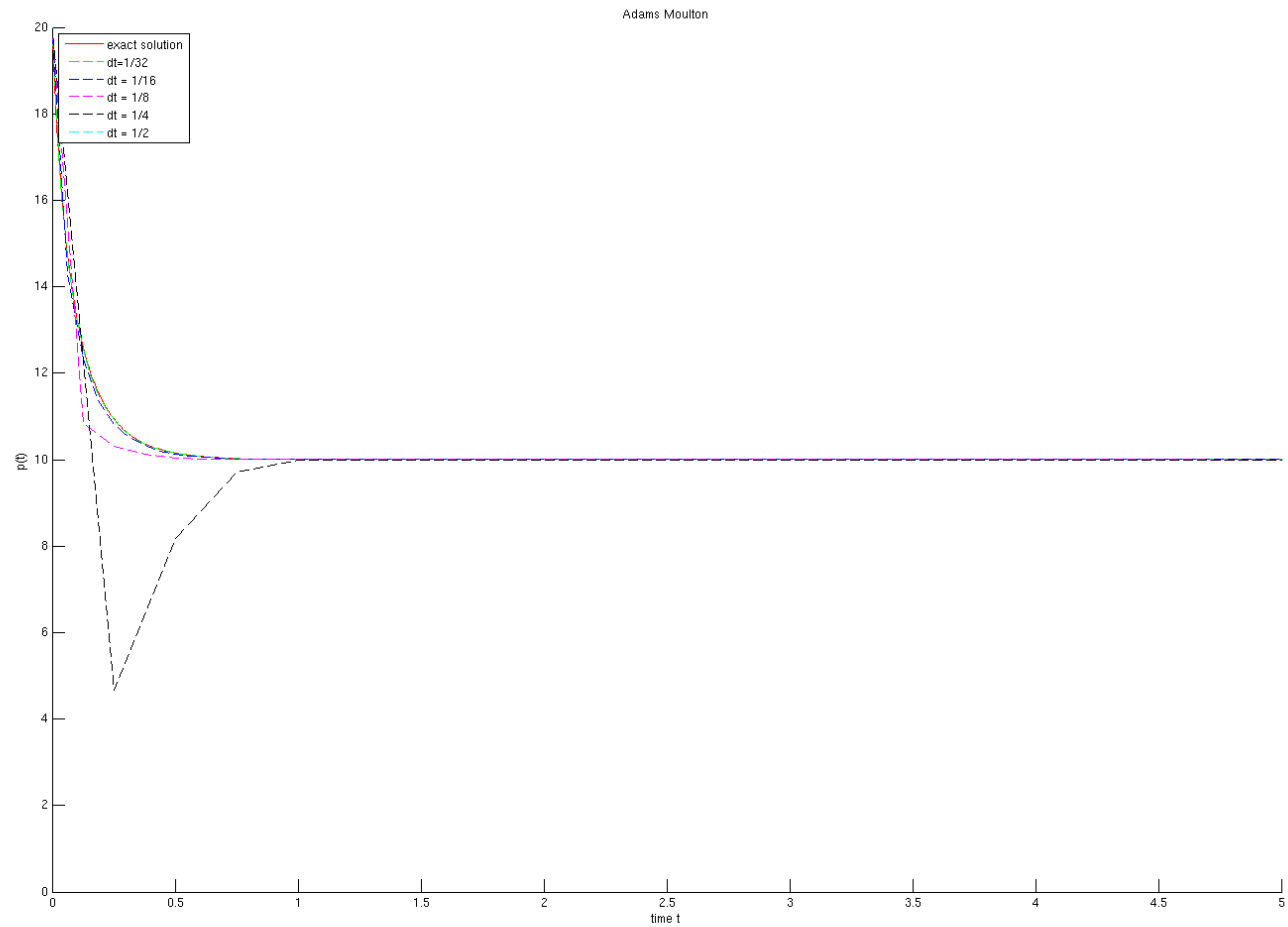
Worksheet 2 – Solution



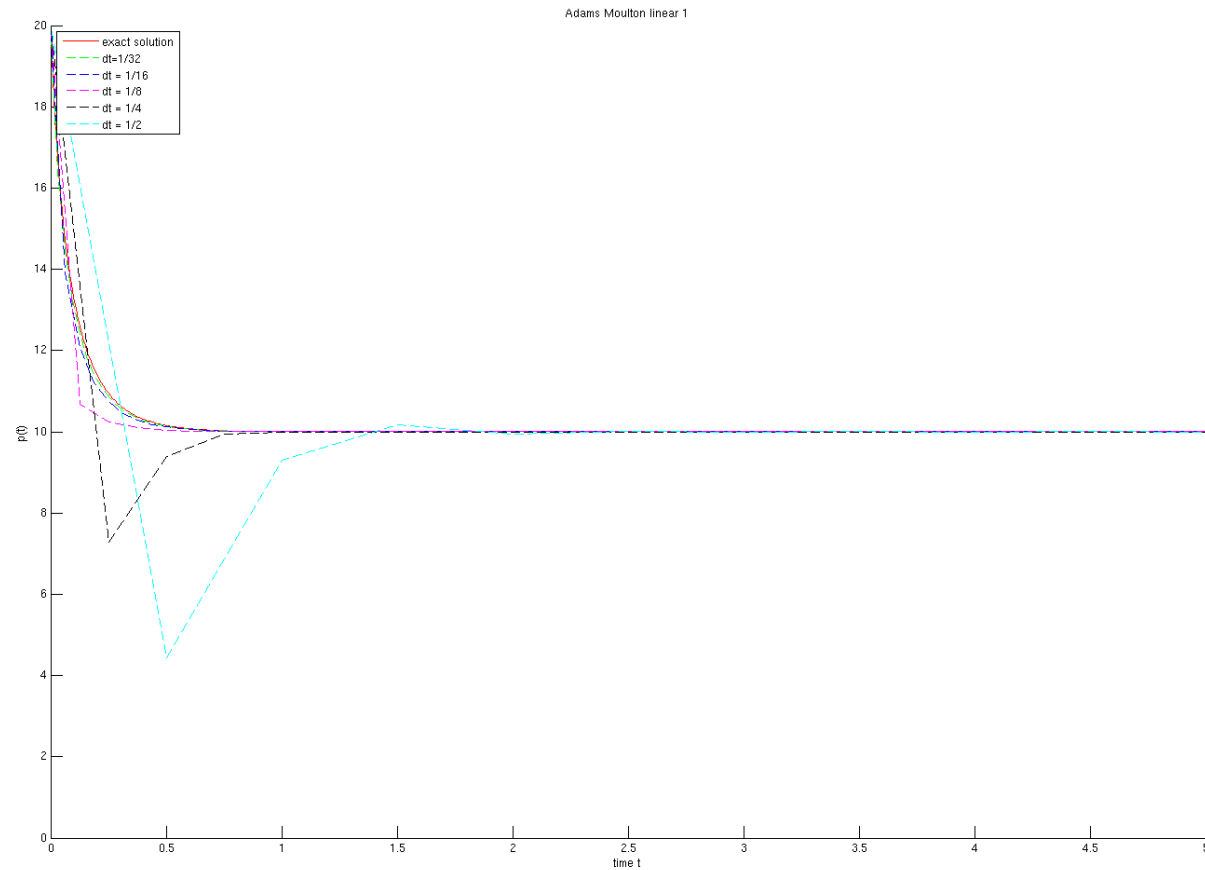
Worksheet 2 – Solution



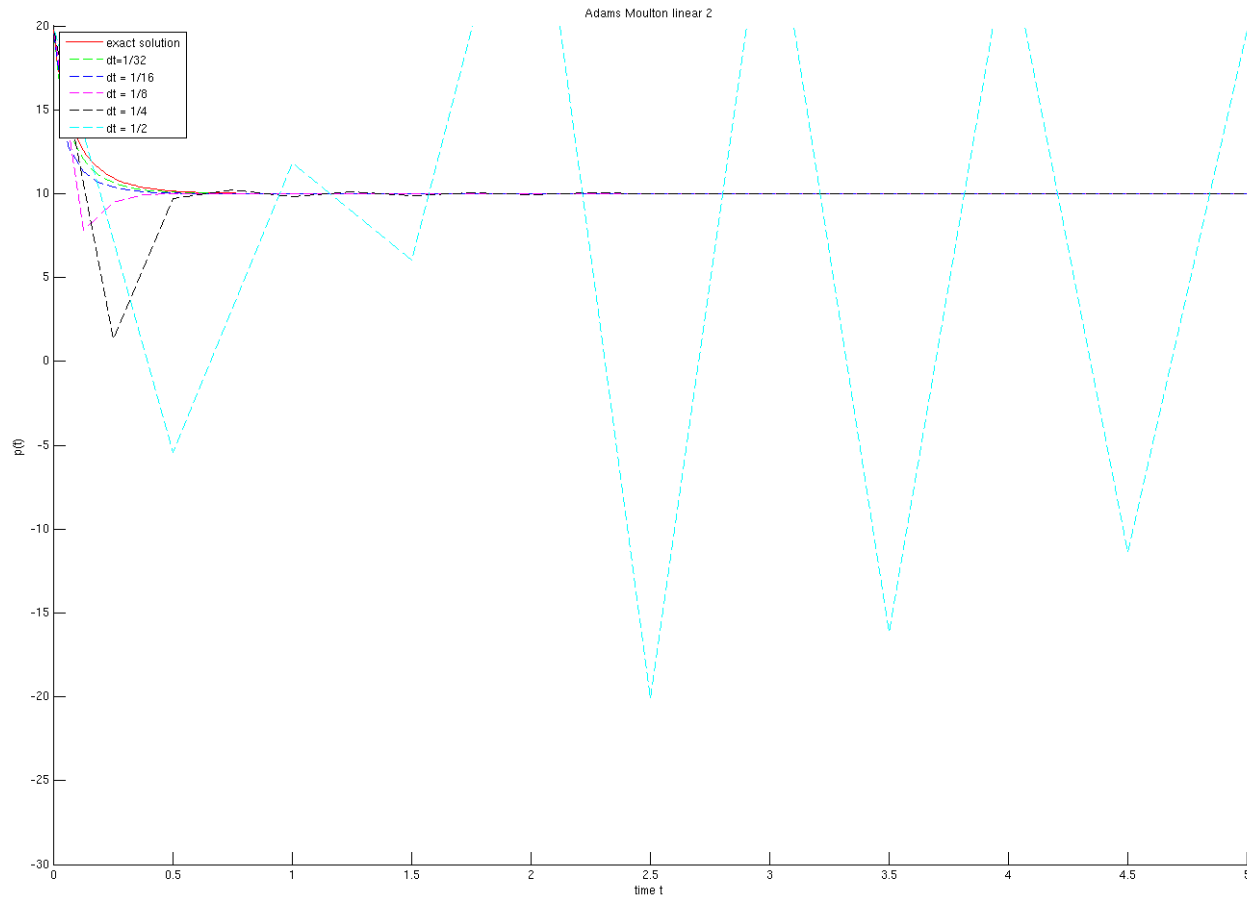
Worksheet 2 – Solution



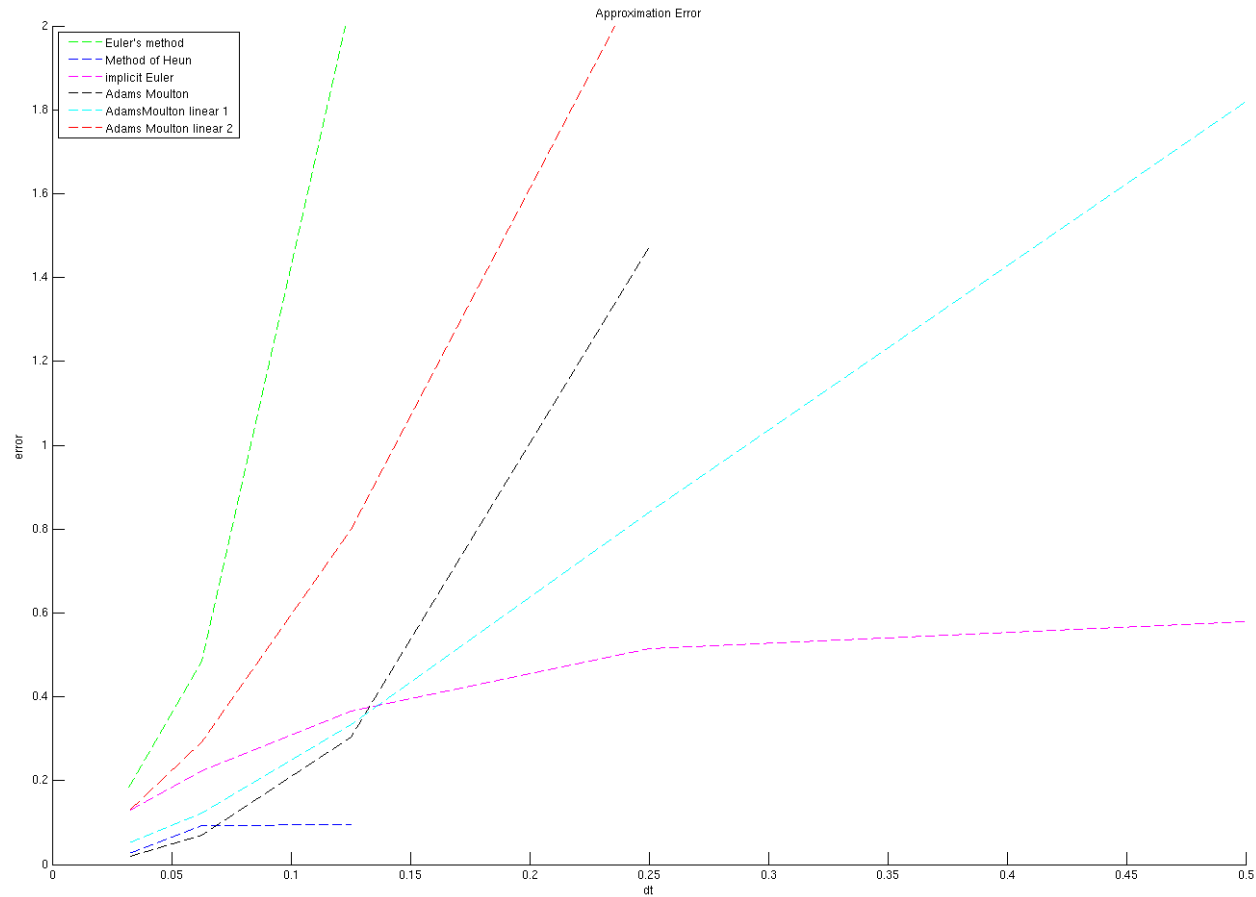
Worksheet 2 – Solution



Worksheet 2 – Solution



Worksheet 2 – Solution



Worksheet 2 – Solution

explicit Euler

dt	1/2	1/4	1/8	1/16	1/32
error	–	–	2.0595	0.4854	0.1754
error red.	–	–	–	4.24	2.77

q=1

Worksheet 2 – Solution

Heun

dt	1/2	1/4	1/8	1/16	1/32
error	–	–	0.0950	0.0938	0.0235
error red.	–	–	–	1.01	3.99

q=2

Worksheet 2 – Solution

implicit Euler

dt	1/2	1/4	1/8	1/16	1/32
error	0.5781	0.5151	0.3665	0.2233	0.1245
error red.	–	1.12	1.41	1.64	1.79

q=1

Worksheet 2 – Solution

Adams Moulton

dt	1/2	1/4	1/8	1/16	1/32
error	–	1.4730	0.3035	0.0704	0.0167
error red.	–	–	4.85	4.31	4.21

q=2

Worksheet 2 – Solution

Adams Moulton linearisation 1

dt	1/2	1/4	1/8	1/16	1/32
error	1.8196	0.8402	0.3342	0.1237	0.0488
error red.	–	2.17	2.51	2.69	2.53

q=1

Worksheet 2 – Solution

Adams Moulton linearisation 2

dt	1/2	1/4	1/8	1/16	1/32
error	18.856	2.1543	0.7990	0.2326	0.1220
error red.	–	8.75	2.70	2.73	2.40

q=1

Worksheet 2 – Solution

dt	Expl. Euler	Heun	Impl. Euler	Adams Moulton	Adams Moulton I1	Adams Moulton I2
1/2			X	–	X	O
1/4			X	X	X	X
1/8	X	X	X	X	X	X
1/16	X	X	X	X	X	X
1/32	X	X	X	X	X	X