

Assignment – 12

Mohsin azam

244103007

Result for $h = 0.100000$

Time	RK4 Height	Heun Height	RK4 Error	Heun Error
0.0	2.98961670	2.98961670	0.00346110	0.00346110
0.1	2.97925139	2.97925141	0.00346710	0.00346710
0.2	2.96890409	2.96890411	0.00347312	0.00347311
0.3	2.95857478	2.95857481	0.00347916	0.00347915
0.4	2.94826348	2.94826351	0.00348523	0.00348521
0.5	2.93797017	2.93797022	0.00349131	0.00349130
0.6	2.92769487	2.92769492	0.00349742	0.00349740
0.7	2.91743756	2.91743762	0.00350354	0.00350352
0.8	2.90719826	2.90719833	0.00350969	0.00350967
0.9	2.89697695	2.89697703	0.00351586	0.00351583
1.0	2.88677365	2.88677373	0.00352205	0.00352202
1.1	2.87658834	2.87658844	0.00352827	0.00352823
1.2	2.86642104	2.86642114	0.00353450	0.00353447
1.3	2.85627173	2.85627184	0.00354076	0.00354072
1.4	2.84614043	2.84614054	0.00354704	0.00354700
1.5	2.83602712	2.83602725	0.00355334	0.00355330
1.6	2.82593182	2.82593195	0.00355966	0.00355962
1.7	2.81585451	2.81585465	0.00356601	0.00356596
1.8	2.80579521	2.80579536	0.00357238	0.00357233
1.9	2.79575390	2.79575406	0.00357877	0.00357872
2.0	2.78573060	2.78573076	0.00358519	0.00358513
2.1	2.77572529	2.77572547	0.00359163	0.00359157
2.2	2.76573799	2.76573817	0.00359809	0.00359802

2.3	2.75576868	2.75576887	0.00360457	0.00360451
2.4	2.74581738	2.74581757	0.00361108	0.00361101
2.5	2.73588407	2.73588428	0.00361761	0.00361754
2.6	2.72596877	2.72596898	0.00362417	0.00362409
2.7	2.71607146	2.71607168	0.00363075	0.00363067
2.8	2.70619216	2.70619239	0.00363735	0.00363727
2.9	2.69633085	2.69633109	0.00364398	0.00364389
3.0	2.68648755	2.68648779	0.00365063	0.00365054
3.1	2.67666224	2.67666249	0.00365731	0.00365721
3.2	2.66685494	2.66685520	0.00366401	0.00366391
3.3	2.65706564	2.65706590	0.00367073	0.00367063
3.4	2.64729433	2.64729460	0.00367748	0.00367738
3.5	2.63754103	2.63754131	0.00368425	0.00368415
3.6	2.62780572	2.62780601	0.00369105	0.00369094
3.7	2.61808842	2.61808871	0.00369788	0.00369777
3.8	2.60838911	2.60838942	0.00370473	0.00370461
3.9	2.59870781	2.59870812	0.00371160	0.00371148
4.0	2.58904450	2.58904482	0.00371850	0.00371838
4.1	2.57939920	2.57939952	0.00372543	0.00372530
4.2	2.56977189	2.56977223	0.00373238	0.00373225
4.3	2.56016259	2.56016293	0.00373936	0.00373923
4.4	2.55057128	2.55057163	0.00374637	0.00374623
4.5	2.54099798	2.54099834	0.00375340	0.00375326
4.6	2.53144267	2.53144304	0.00376045	0.00376031
4.7	2.52190537	2.52190574	0.00376754	0.00376739
4.8	2.51238606	2.51238645	0.00377465	0.00377450
4.9	2.50288476	2.50288515	0.00378179	0.00378163
5.0	2.49340145	2.49340185	0.00378895	0.00378879
5.1	2.48393615	2.48393655	0.00379614	0.00379598
5.2	2.47448884	2.47448926	0.00380336	0.00380319

5.3	2.46505954	2.46505996	0.00381061	0.00381044
5.4	2.45564823	2.45564866	0.00381788	0.00381771
5.5	2.44625493	2.44625537	0.00382518	0.00382501
5.6	2.43687962	2.43688007	0.00383251	0.00383233
5.7	2.42752232	2.42752277	0.00383987	0.00383969
5.8	2.41818301	2.41818347	0.00384726	0.00384707
5.9	2.40886171	2.40886218	0.00385467	0.00385448
6.0	2.39955840	2.39955888	0.00386212	0.00386192
6.1	2.39027310	2.39027358	0.00386959	0.00386939
6.2	2.38100579	2.38100629	0.00387709	0.00387688
6.3	2.37175649	2.37175699	0.00388462	0.00388441
6.4	2.36252519	2.36252569	0.00389218	0.00389197
6.5	2.35331188	2.35331240	0.00389977	0.00389955
6.6	2.34411658	2.34411710	0.00390739	0.00390717
6.7	2.33493927	2.33493980	0.00391504	0.00391481
6.8	2.32577997	2.32578050	0.00392272	0.00392249
6.9	2.31663866	2.31663921	0.00393043	0.00393019
7.0	2.30751536	2.30751591	0.00393816	0.00393793
7.1	2.29841005	2.29841061	0.00394593	0.00394569
7.2	2.28932275	2.28932332	0.00395374	0.00395349
7.3	2.28025344	2.28025402	0.00396157	0.00396131
7.4	2.27120214	2.27120272	0.00396943	0.00396917
7.5	2.26216883	2.26216943	0.00397732	0.00397706
7.6	2.25315353	2.25315413	0.00398525	0.00398498
7.7	2.24415622	2.24415683	0.00399321	0.00399294
7.8	2.23517692	2.23517753	0.00400119	0.00400092
7.9	2.22621561	2.22621624	0.00400922	0.00400894
8.0	2.21727231	2.21727294	0.00401727	0.00401698
8.1	2.20834700	2.20834764	0.00402535	0.00402506
8.2	2.19943970	2.19944035	0.00403347	0.00403318

8.3	2.19055039	2.19055105	0.00404162	0.00404132
8.4	2.18167909	2.18167975	0.00404981	0.00404950
8.5	2.17282578	2.17282645	0.00405802	0.00405772
8.6	2.16399048	2.16399116	0.00406627	0.00406596
8.7	2.15517317	2.15517386	0.00407456	0.00407424
8.8	2.14637387	2.14637456	0.00408288	0.00408255
8.9	2.13759256	2.13759327	0.00409123	0.00409090
9.0	2.12882926	2.12882997	0.00409961	0.00409928
9.1	2.12008395	2.12008467	0.00410803	0.00410770
9.2	2.11135665	2.11135738	0.00411649	0.00411615
9.3	2.10264734	2.10264808	0.00412498	0.00412463
9.4	2.09395604	2.09395678	0.00413351	0.00413315
9.5	2.08528273	2.08528348	0.00414207	0.00414171
9.6	2.07662743	2.07662819	0.00415066	0.00415030
9.7	2.06799013	2.06799089	0.00415929	0.00415893
9.8	2.05937082	2.05937159	0.00416796	0.00416759
9.9	2.05076952	2.05077030	0.00417667	0.00417629
10.0	2.04218621	2.04218700	0.00418541	0.00418502
10.1	2.03362091	2.03362170	0.00419418	0.00419379
10.2	2.02507360	2.02507441	0.00420300	0.00420260
10.3	2.01654430	2.01654511	0.00421185	0.00421145
10.4	2.00803299	2.00803381	0.00422074	0.00422033
10.5	1.99953969	1.99954051	0.00422966	0.00422925
10.6	1.99106438	1.99106522	0.00423863	0.00423821
10.7	1.98260708	1.98260792	0.00424763	0.00424721
10.8	1.97416777	1.97416862	0.00425667	0.00425624
10.9	1.96574647	1.96574733	0.00426575	0.00426531
11.0	1.95734316	1.95734403	0.00427487	0.00427443
11.1	1.94895786	1.94895873	0.00428402	0.00428358
11.2	1.94059055	1.94059143	0.00429322	0.00429277

11.3	1.93224125	1.93224214	0.00430246	0.00430200
11.4	1.92390994	1.92391084	0.00431173	0.00431127
11.5	1.91559664	1.91559754	0.00432105	0.00432058
11.6	1.90730133	1.90730225	0.00433040	0.00432993
11.7	1.89902403	1.89902495	0.00433980	0.00433932
11.8	1.89076472	1.89076565	0.00434924	0.00434875
11.9	1.88252342	1.88252436	0.00435872	0.00435822
12.0	1.87430011	1.87430106	0.00436824	0.00436773
12.1	1.86609481	1.86609576	0.00437780	0.00437729
12.2	1.85790750	1.85790846	0.00438740	0.00438689
12.3	1.84973820	1.84973917	0.00439705	0.00439652
12.4	1.84158689	1.84158787	0.00440673	0.00440621
12.5	1.83345359	1.83345457	0.00441647	0.00441593
12.6	1.82533828	1.82533928	0.00442624	0.00442570
12.7	1.81724098	1.81724198	0.00443606	0.00443551
12.8	1.80916167	1.80916268	0.00444592	0.00444536
12.9	1.80110037	1.80110139	0.00445582	0.00445526
13.0	1.79305707	1.79305809	0.00446577	0.00446520
13.1	1.78503176	1.78503279	0.00447577	0.00447519
13.2	1.77702446	1.77702549	0.00448581	0.00448522
13.3	1.76903515	1.76903620	0.00449589	0.00449530
13.4	1.76106385	1.76106490	0.00450602	0.00450542
13.5	1.75311054	1.75311160	0.00451619	0.00451559
13.6	1.74517524	1.74517631	0.00452641	0.00452580
13.7	1.73725793	1.73725901	0.00453668	0.00453606
13.8	1.72935863	1.72935971	0.00454700	0.00454637
13.9	1.72147732	1.72147842	0.00455736	0.00455672
14.0	1.71361402	1.71361512	0.00456777	0.00456713
14.1	1.70576871	1.70576982	0.00457822	0.00457757
14.2	1.69794141	1.69794252	0.00458873	0.00458807

14.3	1.69013210	1.69013323	0.00459928	0.00459862
14.4	1.68234080	1.68234193	0.00460988	0.00460921
14.5	1.67456749	1.67456863	0.00462053	0.00461985
14.6	1.66681219	1.66681334	0.00463123	0.00463054
14.7	1.65907488	1.65907604	0.00464198	0.00464128
14.8	1.65135558	1.65135674	0.00465278	0.00465208
14.9	1.64365427	1.64365544	0.00466363	0.00466292
15.0	1.63597097	1.63597215	0.00467453	0.00467381
15.1	1.62830566	1.62830685	0.00468548	0.00468475
15.2	1.62065836	1.62065955	0.00469648	0.00469575
15.3	1.61302905	1.61303026	0.00470753	0.00470679
15.4	1.60541775	1.60541896	0.00471864	0.00471789
15.5	1.59782444	1.59782566	0.00472980	0.00472904
15.6	1.59024914	1.59025037	0.00474101	0.00474024
15.7	1.58269183	1.58269307	0.00475228	0.00475150
15.8	1.57515253	1.57515377	0.00476360	0.00476281
15.9	1.56763122	1.56763247	0.00477497	0.00477418
16.0	1.56012792	1.56012918	0.00478640	0.00478559
16.1	1.55264262	1.55264388	0.00479788	0.00479707
16.2	1.54517531	1.54517658	0.00480942	0.00480860
16.3	1.53772601	1.53772729	0.00482101	0.00482018
16.4	1.53029470	1.53029599	0.00483266	0.00483182
16.5	1.52288140	1.52288269	0.00484436	0.00484352
16.6	1.51548609	1.51548740	0.00485613	0.00485527
16.7	1.50810879	1.50811010	0.00486795	0.00486708
16.8	1.50074948	1.50075080	0.00487982	0.00487895
16.9	1.49340818	1.49340950	0.00489176	0.00489087
17.0	1.48608487	1.48608621	0.00490375	0.00490286
17.1	1.47877957	1.47878091	0.00491581	0.00491490
17.2	1.47149226	1.47149361	0.00492792	0.00492700

17.3	1.46422296	1.46422432	0.00494009	0.00493917
17.4	1.45697165	1.45697302	0.00495232	0.00495139
17.5	1.44973835	1.44973972	0.00496462	0.00496367
17.6	1.44252304	1.44252442	0.00497697	0.00497602
17.7	1.43532574	1.43532713	0.00498939	0.00498842
17.8	1.42814643	1.42814783	0.00500186	0.00500089
17.9	1.42098513	1.42098653	0.00501441	0.00501342
18.0	1.41384182	1.41384324	0.00502701	0.00502601
18.1	1.40671652	1.40671794	0.00503968	0.00503867
18.2	1.39960921	1.39961064	0.00505241	0.00505139
18.3	1.39251991	1.39252135	0.00506520	0.00506418
18.4	1.38544860	1.38545005	0.00507806	0.00507703
18.5	1.37839530	1.37839675	0.00509099	0.00508994
18.6	1.37135999	1.37136145	0.00510398	0.00510292
18.7	1.36434269	1.36434416	0.00511704	0.00511597
18.8	1.35734338	1.35734486	0.00513017	0.00512908
18.9	1.35036208	1.35036356	0.00514336	0.00514227
19.0	1.34339877	1.34340027	0.00515662	0.00515552
19.1	1.33645347	1.33645497	0.00516995	0.00516883
19.2	1.32952616	1.32952767	0.00518335	0.00518222
19.3	1.32261686	1.32261838	0.00519682	0.00519568
19.4	1.31572556	1.31572708	0.00521036	0.00520920
19.5	1.30885225	1.30885378	0.00522397	0.00522280
19.6	1.30199695	1.30199848	0.00523765	0.00523647
19.7	1.29515964	1.29516119	0.00525140	0.00525021
19.8	1.28834034	1.28834189	0.00526522	0.00526402
19.9	1.28153903	1.28154059	0.00527912	0.00527791
20.0	1.27475573	1.27475730	0.00529309	0.00529187
20.1	1.26799042	1.26799200	0.00530714	0.00530590
20.2	1.26124312	1.26124470	0.00532126	0.00532001

20.3	1.25451381	1.25451541	0.00533545	0.00533419
20.4	1.24780251	1.24780411	0.00534973	0.00534845
20.5	1.24110920	1.24111081	0.00536407	0.00536278
20.6	1.23443390	1.23443551	0.00537850	0.00537720
20.7	1.22777659	1.22777822	0.00539300	0.00539169
20.8	1.22113729	1.22113892	0.00540758	0.00540625
20.9	1.21451598	1.21451762	0.00542224	0.00542090
21.0	1.20791268	1.20791433	0.00543698	0.00543563
21.1	1.20132737	1.20132903	0.00545181	0.00545043
21.2	1.19476007	1.19476173	0.00546671	0.00546532
21.3	1.18821076	1.18821243	0.00548169	0.00548029
21.4	1.18167946	1.18168114	0.00549676	0.00549534
21.5	1.17516615	1.17516784	0.00551190	0.00551048
21.6	1.16867085	1.16867254	0.00552714	0.00552569
21.7	1.16219354	1.16219525	0.00554245	0.00554100
21.8	1.15573424	1.15573595	0.00555786	0.00555638
21.9	1.14929293	1.14929465	0.00557334	0.00557186
22.0	1.14286963	1.14287136	0.00558892	0.00558742
22.1	1.13646432	1.13646606	0.00560458	0.00560306
22.2	1.13007702	1.13007876	0.00562033	0.00561880
22.3	1.12370771	1.12370946	0.00563617	0.00563462
22.4	1.11735641	1.11735817	0.00565210	0.00565053
22.5	1.11102310	1.11102487	0.00566812	0.00566654
22.6	1.10470780	1.10470957	0.00568422	0.00568263
22.7	1.09841050	1.09841228	0.00570043	0.00569881
22.8	1.09213119	1.09213298	0.00571672	0.00571509
22.9	1.08586989	1.08587168	0.00573311	0.00573146
23.0	1.07962658	1.07962839	0.00574959	0.00574793
23.1	1.07340128	1.07340309	0.00576616	0.00576449
23.2	1.06719397	1.06719579	0.00578284	0.00578114

23.3	1.06100467	1.06100649	0.00579961	0.00579789
23.4	1.05483336	1.05483520	0.00581647	0.00581474
23.5	1.04868006	1.04868190	0.00583344	0.00583169
23.6	1.04254475	1.04254660	0.00585050	0.00584874
23.7	1.03642745	1.03642931	0.00586767	0.00586588
23.8	1.03032814	1.03033001	0.00588493	0.00588313
23.9	1.02424684	1.02424871	0.00590230	0.00590048
24.0	1.01818353	1.01818542	0.00591977	0.00591793
24.1	1.01213823	1.01214012	0.00593734	0.00593549
24.2	1.00611092	1.00611282	0.00595502	0.00595315
24.3	1.00010162	1.00010352	0.00597281	0.00597091
24.4	0.99411031	0.99411223	0.00599070	0.00598878
24.5	0.98813701	0.98813893	0.00600869	0.00600676
24.6	0.98218170	0.98218363	0.00602680	0.00602485
24.7	0.97624440	0.97624634	0.00604502	0.00604304
24.8	0.97032509	0.97032704	0.00606334	0.00606135
24.9	0.96442379	0.96442574	0.00608178	0.00607977
25.0	0.95854048	0.95854244	0.00610033	0.00609830
25.1	0.95267518	0.95267715	0.00611900	0.00611694
25.2	0.94682787	0.94682985	0.00613777	0.00613570
25.3	0.94099857	0.94100055	0.00615667	0.00615457
25.4	0.93518726	0.93518926	0.00617568	0.00617356
25.5	0.92939396	0.92939596	0.00619481	0.00619267
25.6	0.92361865	0.92362066	0.00621405	0.00621189
25.7	0.91786135	0.91786337	0.00623342	0.00623124
25.8	0.91212205	0.91212407	0.00625291	0.00625071
25.9	0.90640074	0.90640277	0.00627252	0.00627029
26.0	0.90069744	0.90069947	0.00629226	0.00629001
26.1	0.89501213	0.89501418	0.00631211	0.00630984
26.2	0.88934483	0.88934688	0.00633210	0.00632980

26.3	0.88369552	0.88369758	0.00635221	0.00634989
26.4	0.87806422	0.87806629	0.00637245	0.00637011
26.5	0.87245091	0.87245299	0.00639282	0.00639045
26.6	0.86685561	0.86685769	0.00641332	0.00641093
26.7	0.86127830	0.86128040	0.00643395	0.00643153
26.8	0.85571900	0.85572110	0.00645471	0.00645227
26.9	0.85017769	0.85017980	0.00647561	0.00647315
27.0	0.84465439	0.84465650	0.00649665	0.00649416
27.1	0.83914908	0.83915121	0.00651782	0.00651530
27.2	0.83366178	0.83366391	0.00653913	0.00653659
27.3	0.82819247	0.82819461	0.00656058	0.00655801
27.4	0.82274117	0.82274332	0.00658217	0.00657958
27.5	0.81730786	0.81731002	0.00660391	0.00660128
27.6	0.81189256	0.81189472	0.00662578	0.00662314
27.7	0.80649525	0.80649743	0.00664781	0.00664513
27.8	0.80111595	0.80111813	0.00666998	0.00666727
27.9	0.79575464	0.79575683	0.00669230	0.00668956
28.0	0.79041134	0.79041353	0.00671476	0.00671200
28.1	0.78508603	0.78508824	0.00673738	0.00673460
28.2	0.77977873	0.77978094	0.00676016	0.00675734
28.3	0.77448942	0.77449164	0.00678308	0.00678024
28.4	0.76921812	0.76922035	0.00680617	0.00680329
28.5	0.76396481	0.76396705	0.00682941	0.00682650
28.6	0.75872951	0.75873175	0.00685281	0.00684987
28.7	0.75351220	0.75351446	0.00687637	0.00687340
28.8	0.74831290	0.74831516	0.00690009	0.00689710
28.9	0.74313159	0.74313386	0.00692398	0.00692095
29.0	0.73796829	0.73797056	0.00694804	0.00694498
29.1	0.73282299	0.73282527	0.00697226	0.00696917
29.2	0.72769568	0.72769797	0.00699665	0.00699352

29.3	0.72258638	0.72258867	0.00702121	0.00701805
29.4	0.71749507	0.71749738	0.00704595	0.00704276
29.5	0.71242177	0.71242408	0.00707086	0.00706763
29.6	0.70736646	0.70736878	0.00709594	0.00709269
29.7	0.70232916	0.70233148	0.00712121	0.00711792
29.8	0.69730985	0.69731219	0.00714666	0.00714333
29.9	0.69230855	0.69231089	0.00717228	0.00716892
30.0	0.68732524	0.68732759	0.00719810	0.00719470
30.1	0.68235994	0.68236230	0.00722410	0.00722066
30.2	0.67741263	0.67741500	0.00725029	0.00724682
30.3	0.67248333	0.67248570	0.00727667	0.00727316
30.4	0.66757202	0.66757441	0.00730324	0.00729969
30.5	0.66267872	0.66268111	0.00733000	0.00732642
30.6	0.65780341	0.65780581	0.00735697	0.00735335
30.7	0.65294611	0.65294851	0.00738413	0.00738047
30.8	0.64810680	0.64810922	0.00741149	0.00740779
30.9	0.64328550	0.64328792	0.00743906	0.00743532
31.0	0.63848219	0.63848462	0.00746683	0.00746305
31.1	0.63369689	0.63369933	0.00749481	0.00749099
31.2	0.62892958	0.62893203	0.00752300	0.00751914
31.3	0.62418028	0.62418273	0.00755141	0.00754751
31.4	0.61944897	0.61945144	0.00758003	0.00757608
31.5	0.61473567	0.61473814	0.00760887	0.00760488
31.6	0.61004036	0.61004284	0.00763792	0.00763389
31.7	0.60536306	0.60536554	0.00766721	0.00766313
31.8	0.60070375	0.60070625	0.00769671	0.00769259
31.9	0.59606245	0.59606495	0.00772645	0.00772228
32.0	0.59143914	0.59144165	0.00775641	0.00775220
32.1	0.58683384	0.58683636	0.00778661	0.00778235
32.2	0.58224653	0.58224906	0.00781704	0.00781274

32.3	0.57767723	0.57767976	0.00784771	0.00784337
32.4	0.57312593	0.57312847	0.00787863	0.00787423
32.5	0.56859262	0.56859517	0.00790979	0.00790534
32.6	0.56407732	0.56407987	0.00794119	0.00793670
32.7	0.55958001	0.55958257	0.00797285	0.00796831
32.8	0.55510071	0.55510328	0.00800476	0.00800017
32.9	0.55063940	0.55064198	0.00803693	0.00803228
33.0	0.54619610	0.54619868	0.00806936	0.00806466
33.1	0.54177079	0.54177339	0.00810204	0.00809729
33.2	0.53736349	0.53736609	0.00813500	0.00813019
33.3	0.53297418	0.53297679	0.00816822	0.00816336
33.4	0.52860288	0.52860550	0.00820172	0.00819681
33.5	0.52424957	0.52425220	0.00823549	0.00823052
33.6	0.51991427	0.51991690	0.00826954	0.00826452
33.7	0.51559696	0.51559960	0.00830388	0.00829880
33.8	0.51129766	0.51130031	0.00833850	0.00833336
33.9	0.50701635	0.50701901	0.00837341	0.00836821
34.0	0.50275305	0.50275571	0.00840861	0.00840336
34.1	0.49850774	0.49851042	0.00844412	0.00843880
34.2	0.49428044	0.49428312	0.00847992	0.00847454
34.3	0.49007113	0.49007382	0.00851603	0.00851058
34.4	0.48587983	0.48588253	0.00855244	0.00854694
34.5	0.48170652	0.48170923	0.00858917	0.00858360
34.6	0.47755122	0.47755393	0.00862622	0.00862058
34.7	0.47341391	0.47341663	0.00866358	0.00865789
34.8	0.46929461	0.46929734	0.00870128	0.00869551
34.9	0.46519330	0.46519604	0.00873930	0.00873347
35.0	0.46111000	0.46111274	0.00877765	0.00877175
35.1	0.45704469	0.45704745	0.00881635	0.00881038
35.2	0.45299739	0.45300015	0.00885538	0.00884934

35.3	0.44896808	0.44897085	0.00889476	0.00888865
35.4	0.44495678	0.44495956	0.00893450	0.00892832
35.5	0.44096348	0.44096626	0.00897459	0.00896833
35.6	0.43698817	0.43699096	0.00901504	0.00900871
35.7	0.43303087	0.43303366	0.00905586	0.00904946
35.8	0.42909156	0.42909437	0.00909705	0.00909057
35.9	0.42517026	0.42517307	0.00913862	0.00913206
36.0	0.42126695	0.42126977	0.00918057	0.00917393
36.1	0.41738165	0.41738448	0.00922290	0.00921619
36.2	0.41351434	0.41351718	0.00926563	0.00925883
36.3	0.40966504	0.40966788	0.00930876	0.00930187
36.4	0.40583373	0.40583659	0.00935229	0.00934532
36.5	0.40202043	0.40202329	0.00939622	0.00938917
36.6	0.39822512	0.39822799	0.00944058	0.00943344
36.7	0.39444782	0.39445069	0.00948535	0.00947812
36.8	0.39068851	0.39069140	0.00953055	0.00952324
36.9	0.38694721	0.38695010	0.00957618	0.00956878
37.0	0.38322390	0.38322680	0.00962226	0.00961476
37.1	0.37951860	0.37952151	0.00966877	0.00966118
37.2	0.37583129	0.37583421	0.00971574	0.00970806
37.3	0.37216199	0.37216491	0.00976317	0.00975539
37.4	0.36851068	0.36851362	0.00981106	0.00980318
37.5	0.36487738	0.36488032	0.00985943	0.00985145
37.6	0.36126207	0.36126502	0.00990827	0.00990019
37.7	0.35766477	0.35766772	0.00995760	0.00994942
37.8	0.35408546	0.35408843	0.01000743	0.00999914
37.9	0.35052416	0.35052713	0.01005775	0.01004936
38.0	0.34698085	0.34698383	0.01010859	0.01010009
38.1	0.34345555	0.34345854	0.01015994	0.01015133
38.2	0.33994824	0.33995124	0.01021182	0.01020309

38.3	0.33645894	0.33646194	0.01026422	0.01025539
38.4	0.33298763	0.33299065	0.01031717	0.01030822
38.5	0.32953433	0.32953735	0.01037067	0.01036160
38.6	0.32609902	0.32610205	0.01042473	0.01041554
38.7	0.32268172	0.32268475	0.01047935	0.01047004
38.8	0.31928242	0.31928546	0.01053454	0.01052511
38.9	0.31590111	0.31590416	0.01059033	0.01058077
39.0	0.31253781	0.31254086	0.01064670	0.01063702
39.1	0.30919250	0.30919557	0.01070368	0.01069387
39.2	0.30586520	0.30586827	0.01076127	0.01075133
39.3	0.30255589	0.30255897	0.01081949	0.01080941
39.4	0.29926459	0.29926768	0.01087834	0.01086812
39.5	0.29599128	0.29599438	0.01093783	0.01092748
39.6	0.29273598	0.29273908	0.01099798	0.01098748
39.7	0.28949867	0.28950178	0.01105879	0.01104815
39.8	0.28627937	0.28628249	0.01112028	0.01111094
39.9	0.28307806	0.28308119	0.01118245	0.01117152
40.0	0.27989476	0.27989789	0.01124533	0.01123424
40.1	0.27672945	0.27673260	0.01130891	0.01129767
40.2	0.27358215	0.27358530	0.01137322	0.01136183
40.3	0.27045284	0.27045600	0.01143826	0.01142671
40.4	0.26734154	0.26734471	0.01150406	0.01149234
40.5	0.26424823	0.26425141	0.01157061	0.01155873
40.6	0.26117293	0.26117611	0.01163794	0.01162589
40.7	0.25811562	0.25811882	0.01170606	0.01169383
40.8	0.25507632	0.25507952	0.01177497	0.01176258
40.9	0.25205501	0.25205822	0.01184471	0.01183213
41.0	0.24905171	0.24905492	0.01191528	0.01190252
41.1	0.24606640	0.24606963	0.01198669	0.01197374
41.2	0.24309910	0.24310233	0.01205896	0.01204583

41.3	0.24014979	0.24015303	0.01213211	0.01211878
41.4	0.23721849	0.23722174	0.01220615	0.01219263
41.5	0.23430518	0.23430844	0.01228110	0.01226738
41.6	0.23140988	0.23141314	0.01235698	0.01234305
41.7	0.22853257	0.22853585	0.01243380	0.01241967
41.8	0.22567327	0.22567655	0.01251159	0.01249724
41.9	0.22283196	0.22283525	0.01259035	0.01257578
42.0	0.22000866	0.22001195	0.01267011	0.01265532
42.1	0.21720336	0.21720666	0.01275088	0.01273587
42.2	0.21441605	0.21441936	0.01283270	0.01281746
42.3	0.21164675	0.21165006	0.01291557	0.01290009
42.4	0.20889544	0.20889877	0.01299951	0.01298380
42.5	0.20616214	0.20616547	0.01308456	0.01306860
42.6	0.20344683	0.20345017	0.01317073	0.01315451
42.7	0.20074953	0.20075288	0.01325803	0.01324157
42.8	0.19807022	0.19807358	0.01334651	0.01332978
42.9	0.19540892	0.19541228	0.01343617	0.01341918
43.0	0.19276561	0.19276899	0.01352704	0.01350978
43.1	0.19014031	0.19014369	0.01361916	0.01360161
43.2	0.18753300	0.18753639	0.01371253	0.01369470
43.3	0.18494370	0.18494709	0.01380720	0.01378908
43.4	0.18237239	0.18237580	0.01390318	0.01388476
43.5	0.17981909	0.17982250	0.01400050	0.01398178
43.6	0.17728378	0.17728720	0.01409920	0.01408017
43.7	0.17476648	0.17476991	0.01419930	0.01417995
43.8	0.17226717	0.17227061	0.01430083	0.01428116
43.9	0.16978587	0.16978931	0.01440382	0.01438382
44.0	0.16732256	0.16732602	0.01450830	0.01448797
44.1	0.16487726	0.16488072	0.01461432	0.01459363
44.2	0.16244995	0.16245342	0.01472189	0.01470085

44.3	0.16004065	0.16004413	0.01483106	0.01480966
44.4	0.15764934	0.15765283	0.01494186	0.01492009
44.5	0.15527604	0.15527953	0.01505433	0.01503217
44.6	0.15292073	0.15292423	0.01516850	0.01514596
44.7	0.15058343	0.15058694	0.01528442	0.01526148
44.8	0.14826412	0.14826764	0.01540213	0.01537877
44.9	0.14596282	0.14596634	0.01552166	0.01549789
45.0	0.14367951	0.14368305	0.01564306	0.01561886
45.1	0.14141421	0.14141775	0.01576637	0.01574173
45.2	0.13916691	0.13917045	0.01589165	0.01586656
45.3	0.13693760	0.13694116	0.01601893	0.01599338
45.4	0.13472630	0.13472986	0.01614827	0.01612224
45.5	0.13253299	0.13253656	0.01627971	0.01625320
45.6	0.13035769	0.13036127	0.01641331	0.01638630
45.7	0.12820038	0.12820397	0.01654912	0.01652160
45.8	0.12606108	0.12606467	0.01668720	0.01665915
45.9	0.12393977	0.12394337	0.01682760	0.01679901
46.0	0.12183647	0.12184008	0.01697038	0.01694124
46.1	0.11975116	0.11975478	0.01711561	0.01708590
46.2	0.11768386	0.11768748	0.01726334	0.01723304
46.3	0.11563455	0.11563819	0.01741364	0.01738275
46.4	0.11360325	0.11360689	0.01756659	0.01753508
46.5	0.11158994	0.11159359	0.01772225	0.01769010
46.6	0.10959464	0.10959830	0.01788069	0.01784789
46.7	0.10761733	0.10762100	0.01804199	0.01800852
46.8	0.10565803	0.10566170	0.01820622	0.01817207
46.9	0.10371672	0.10372041	0.01837347	0.01833861
47.0	0.10179342	0.10179711	0.01854383	0.01850823
47.1	0.09988811	0.09989181	0.01871737	0.01868102
47.2	0.09800081	0.09800452	0.01889419	0.01885707

47.3	0.09613150	0.09613522	0.01907438	0.01903647
47.4	0.09428020	0.09428392	0.01925805	0.01921931
47.5	0.09244689	0.09245063	0.01944528	0.01940570
47.6	0.09063159	0.09063533	0.01963619	0.01959574
47.7	0.08883428	0.08883803	0.01983089	0.01978954
47.8	0.08705498	0.08705873	0.02002948	0.01998721
47.9	0.08529367	0.08529744	0.02023210	0.02018886
48.0	0.08355037	0.08355414	0.02043885	0.02039463
48.1	0.08182506	0.08182884	0.02064988	0.02060464
48.2	0.08011776	0.08012155	0.02086530	0.02081901
48.3	0.07842845	0.07843225	0.02108527	0.02103789
48.4	0.07675715	0.07676095	0.02130993	0.02126143
48.5	0.07510385	0.07510766	0.02153942	0.02148976
48.6	0.07346854	0.07347236	0.02177392	0.02172305
48.7	0.07185124	0.07185506	0.02201357	0.02196146
48.8	0.07025193	0.07025577	0.02225856	0.02220516
48.9	0.06867063	0.06867447	0.02250906	0.02245433
49.0	0.06710732	0.06711117	0.02276526	0.02270916
49.1	0.06556202	0.06556588	0.02302737	0.02296984
49.2	0.06403471	0.06403858	0.02329557	0.02323657
49.3	0.06252541	0.06252928	0.02357010	0.02350956
49.4	0.06103410	0.06103799	0.02385118	0.02378905
49.5	0.05956080	0.05956469	0.02413904	0.02407526
49.6	0.05810549	0.05810939	0.02443394	0.02436844
49.7	0.05666819	0.05667210	0.02473613	0.02466884
49.8	0.05524888	0.05525280	0.02504588	0.02497675
49.9	0.05384758	0.05385150	0.02536350	0.02529244
50.0	0.05246427	0.05246821	0.02568927	0.02561621
50.1	0.05109897	0.05110291	0.02602352	0.02594838
50.2	0.04975166	0.04975561	0.02636658	0.02628927

50.3	0.04842236	0.04842632	0.02671880	0.02663923
50.4	0.04711105	0.04711502	0.02708057	0.02699864
50.5	0.04581775	0.04582172	0.02745226	0.02736788
50.6	0.04454244	0.04454643	0.02783430	0.02774736
50.7	0.04328514	0.04328913	0.02822712	0.02813750
50.8	0.04204583	0.04204983	0.02863119	0.02853878
50.9	0.04082453	0.04082854	0.02904699	0.02895166
51.0	0.03962122	0.03962524	0.02947504	0.02937666
51.1	0.03843592	0.03843994	0.02991591	0.02981432
51.2	0.03726861	0.03727265	0.03037015	0.03026522
51.3	0.03611931	0.03612335	0.03083841	0.03072997
51.4	0.03498800	0.03499205	0.03132133	0.03120920
51.5	0.03387470	0.03387876	0.03181961	0.03170362
51.6	0.03277939	0.03278346	0.03233401	0.03221396
51.7	0.03170209	0.03170617	0.03286530	0.03274098
51.8	0.03064279	0.03064687	0.03341435	0.03328554
51.9	0.02960148	0.02960557	0.03398205	0.03384851
52.0	0.02857818	0.02858228	0.03456938	0.03443085
52.1	0.02757287	0.02757698	0.03517736	0.03503358
52.2	0.02658557	0.02658968	0.03580711	0.03565777
52.3	0.02561626	0.02562039	0.03645981	0.03630461
52.4	0.02466496	0.02466909	0.03713675	0.03697534
52.5	0.02373165	0.02373579	0.03783930	0.03767131
52.6	0.02281635	0.02282050	0.03856895	0.03839398
52.7	0.02191904	0.02192320	0.03932728	0.03914491
52.8	0.02103974	0.02104391	0.04011602	0.03992579
52.9	0.02017843	0.02018261	0.04093705	0.04073845
53.0	0.01933513	0.01933931	0.04179238	0.04158487
53.1	0.01850982	0.01851402	0.04268422	0.04246719
53.2	0.01770252	0.01770672	0.04361494	0.04338775

53.3	0.01691321	0.01691743	0.04458715	0.04434909
53.4	0.01614191	0.01614613	0.04560368	0.04535398
53.5	0.01538860	0.01539284	0.04666764	0.04640545
53.6	0.01465330	0.01465754	0.04778242	0.04750680
53.7	0.01393599	0.01394024	0.04895176	0.04866168
53.8	0.01323669	0.01324095	0.05017976	0.04987407
53.9	0.01255538	0.01255965	0.05147094	0.05114839
54.0	0.01189208	0.01189636	0.05283030	0.05248950
54.1	0.01124677	0.01125106	0.05426341	0.05390279
54.2	0.01061947	0.01062377	0.05577641	0.05539424
54.3	0.01001016	0.01001447	0.05737619	0.05697052
54.4	0.00941886	0.00942318	0.05907043	0.05863907
54.5	0.00884555	0.00884988	0.06086774	0.06040824
54.6	0.00829025	0.00829459	0.06277783	0.06228738
54.7	0.00775294	0.00775729	0.06481164	0.06428709
54.8	0.00723364	0.00723800	0.06698160	0.06641934
54.9	0.00673234	0.00673671	0.06930185	0.06869774
55.0	0.00624903	0.00625341	0.07178856	0.07113782
55.1	0.00578373	0.00578812	0.07446029	0.07375743
55.2	0.00533642	0.00534082	0.07733849	0.07657708
55.3	0.00490712	0.00491153	0.08044804	0.07962058
55.4	0.00449581	0.00450024	0.08381798	0.08291564
55.5	0.00410251	0.00410695	0.08748244	0.08649473
55.6	0.00372720	0.00373166	0.09148176	0.09039615
55.7	0.00336990	0.00337436	0.09586400	0.09466540
55.8	0.00303059	0.00303507	0.10068689	0.09935694
55.9	0.00270929	0.00271378	0.10602033	0.10453648
56.0	0.00240598	0.00241050	0.11194985	0.11028410
56.1	0.00212068	0.00212521	0.11858118	0.11669831
56.2	0.00185337	0.00185792	0.12604657	0.12390166

56.3	0.00160407	0.00160864	0.13451370	0.13204857
56.4	0.00137276	0.00137735	0.14419830	0.14133621
56.5	0.00115946	0.00116407	0.15538273	0.15202032
56.6	0.00096415	0.00096880	0.16844369	0.16443838
56.7	0.00078685	0.00079153	0.18389508	0.17904451
56.8	0.00062755	0.00063226	0.20245647	0.19646343
56.9	0.00048624	0.00049100	0.22516657	0.21757607
57.0	0.00036294	0.00036776	0.25358064	0.24365884
57.1	0.00025763	0.00026254	0.29013247	0.27661358
57.2	0.00017033	0.00017536	0.33884218	0.31933624
57.3	0.00010104	0.00010625	0.40680409	0.37617452
57.4	0.00004975	0.00005534	0.50752350	0.45220594
57.5	0.00001653	0.00002321	0.66752659	0.53321616
57.6	0.00000189	0.00000875	0.89071099	0.63881482
57.7	-0.00000487	-0.00000093	6.83498411	5.59628633

Result for $h = 0.300000$

Time	RK4 Height	Heun Height	RK4 Error	Heun Error
0.0	2.96890409	2.96890430	0.01036530	0.01036523
0.3	2.93797017	2.93797059	0.01041930	0.01041916
0.6	2.90719826	2.90719889	0.01047387	0.01047365
0.9	2.87658834	2.87658919	0.01052901	0.01052872
1.2	2.84614043	2.84614149	0.01058473	0.01058436
1.5	2.81585451	2.81585578	0.01064105	0.01064060
1.8	2.78573060	2.78573208	0.01069797	0.01069744
2.1	2.75576868	2.75577038	0.01075550	0.01075489
2.4	2.72596877	2.72597067	0.01081365	0.01081296
2.7	2.69633085	2.69633297	0.01087243	0.01087166
3.0	2.66685494	2.66685727	0.01093186	0.01093100
3.3	2.63754103	2.63754356	0.01099194	0.01099099

3.6	2.60838911	2.60839186	0.01105269	0.01105164
3.9	2.57939920	2.57940216	0.01111411	0.01111297
4.2	2.55057128	2.55057446	0.01117621	0.01117498
4.5	2.52190537	2.52190875	0.01123902	0.01123769
4.8	2.49340145	2.49340505	0.01130253	0.01130111
5.1	2.46505954	2.46506335	0.01136677	0.01136524
5.4	2.43687962	2.43688364	0.01143174	0.01143011
5.7	2.40886171	2.40886594	0.01149746	0.01149572
6.0	2.38100579	2.38101024	0.01156393	0.01156209
6.3	2.35331188	2.35331654	0.01163118	0.01162923
6.6	2.32577997	2.32578483	0.01169922	0.01169715
6.9	2.29841005	2.29841513	0.01176806	0.01176587
7.2	2.27120214	2.27120743	0.01183771	0.01183541
7.5	2.24415622	2.24416172	0.01190819	0.01190577
7.8	2.21727231	2.21727802	0.01197952	0.01197697
8.1	2.19055039	2.19055632	0.01205171	0.01204903
8.4	2.16399048	2.16399662	0.01212477	0.01212197
8.7	2.13759256	2.13759891	0.01219872	0.01219579
9.0	2.11135665	2.11136321	0.01227358	0.01227051
9.3	2.08528273	2.08528951	0.01234937	0.01234616
9.6	2.05937082	2.05937780	0.01242609	0.01242274
9.9	2.03362091	2.03362810	0.01250378	0.01250028
10.2	2.00803299	2.00804040	0.01258244	0.01257880
10.5	1.98260708	1.98261470	0.01266210	0.01265831
10.8	1.95734316	1.95735099	0.01274277	0.01273882
11.1	1.93224125	1.93224929	0.01282448	0.01282037
11.4	1.90730133	1.90730959	0.01290725	0.01290297
11.7	1.88252342	1.88253189	0.01299109	0.01298665
12.0	1.85790750	1.85791618	0.01307602	0.01307141
12.3	1.83345359	1.83346248	0.01316207	0.01315729

12.6	1.80916167	1.80917078	0.01324927	0.01324430
12.9	1.78503176	1.78504108	0.01333762	0.01333247
13.2	1.76106385	1.76107337	0.01342716	0.01342183
13.5	1.73725793	1.73726767	0.01351792	0.01351239
13.8	1.71361402	1.71362397	0.01360990	0.01360418
14.1	1.69013210	1.69014227	0.01370315	0.01369722
14.4	1.66681219	1.66682256	0.01379769	0.01379155
14.7	1.64365427	1.64366486	0.01389354	0.01388718
15.0	1.62065836	1.62066916	0.01399072	0.01398415
15.3	1.59782444	1.59783545	0.01408928	0.01408249
15.6	1.57515253	1.57516375	0.01418924	0.01418222
15.9	1.55264262	1.55265405	0.01429063	0.01428337
16.2	1.53029470	1.53030635	0.01439347	0.01438597
16.5	1.50810879	1.50812064	0.01449781	0.01449006
16.8	1.48608487	1.48609694	0.01460366	0.01459566
17.1	1.46422296	1.46423524	0.01471108	0.01470282
17.4	1.44252304	1.44253554	0.01482009	0.01481156
17.7	1.42098513	1.42099784	0.01493072	0.01492192
18.0	1.39960921	1.39962213	0.01504302	0.01503393
18.3	1.37839530	1.37840843	0.01515703	0.01514764
18.6	1.35734338	1.35735673	0.01527277	0.01526309
18.9	1.33645347	1.33646703	0.01539029	0.01538031
19.2	1.31572556	1.31573932	0.01550964	0.01549934
19.5	1.29515964	1.29517362	0.01563085	0.01562023
19.8	1.27475573	1.27476992	0.01575398	0.01574302
20.1	1.25451381	1.25452822	0.01587905	0.01586775
20.4	1.23443390	1.23444851	0.01600613	0.01599448
20.7	1.21451598	1.21453081	0.01613526	0.01612325
21.0	1.19476007	1.19477511	0.01626649	0.01625411
21.3	1.17516615	1.17518141	0.01639987	0.01638711

21.6	1.15573424	1.15574971	0.01653546	0.01652230
21.9	1.13646432	1.13648000	0.01667331	0.01665974
22.2	1.11735641	1.11737230	0.01681347	0.01679949
22.5	1.09841050	1.09842660	0.01695602	0.01694160
22.8	1.07962658	1.07964290	0.01710100	0.01708614
23.1	1.06100467	1.06102120	0.01724848	0.01723317
23.4	1.04254475	1.04256149	0.01739852	0.01738274
23.7	1.02424684	1.02426379	0.01755120	0.01753494
24.0	1.00611092	1.00612809	0.01770659	0.01768982
24.3	0.98813701	0.98815439	0.01786474	0.01784747
24.6	0.97032509	0.97034269	0.01802575	0.01800795
24.9	0.95267518	0.95269298	0.01818969	0.01817134
25.2	0.93518726	0.93520528	0.01835664	0.01833773
25.5	0.91786135	0.91787958	0.01852668	0.01850718
25.8	0.90069744	0.90071588	0.01869990	0.01867980
26.1	0.88369552	0.88371418	0.01887639	0.01885567
26.4	0.86685561	0.86687448	0.01905624	0.01903489
26.7	0.85017769	0.85019677	0.01923955	0.01921754
27.0	0.83366178	0.83368107	0.01942643	0.01940373
27.3	0.81730786	0.81732737	0.01961697	0.01959356
27.6	0.80111595	0.80113567	0.01981128	0.01978715
27.9	0.78508603	0.78510597	0.02000948	0.01998460
28.2	0.76921812	0.76923827	0.02021169	0.02018603
28.5	0.75351220	0.75353257	0.02041802	0.02039156
28.8	0.73796829	0.73798886	0.02062862	0.02060131
29.1	0.72258638	0.72260716	0.02084360	0.02081543
29.4	0.70736646	0.70738746	0.02106311	0.02103404
29.7	0.69230855	0.69232976	0.02128729	0.02125730
30.0	0.67741263	0.67743406	0.02151629	0.02148534
30.3	0.66267872	0.66270036	0.02175028	0.02171833

30.6	0.64810680	0.64812866	0.02198941	0.02195643
30.9	0.63369689	0.63371896	0.02223386	0.02219981
31.2	0.61944897	0.61947126	0.02248380	0.02244864
31.5	0.60536306	0.60538555	0.02273943	0.02270311
31.8	0.59143914	0.59146185	0.02300093	0.02296342
32.1	0.57767723	0.57770015	0.02326852	0.02322976
32.4	0.56407732	0.56410045	0.02354241	0.02350236
32.7	0.55063940	0.55066275	0.02382282	0.02378143
33.0	0.53736349	0.53738705	0.02411000	0.02406720
33.3	0.52424957	0.52427335	0.02440418	0.02435993
33.6	0.51129766	0.51132165	0.02470563	0.02465986
33.9	0.49850774	0.49853195	0.02501462	0.02496727
34.2	0.48587983	0.48590425	0.02533143	0.02528244
34.5	0.47341391	0.47343855	0.02565637	0.02560567
34.8	0.46111000	0.46113485	0.02598976	0.02593727
35.1	0.44896808	0.44899315	0.02633193	0.02627757
35.4	0.43698817	0.43701345	0.02668322	0.02662691
35.7	0.42517026	0.42519575	0.02704401	0.02698567
36.0	0.41351434	0.41354005	0.02741470	0.02735423
36.3	0.40202043	0.40204635	0.02779568	0.02773299
36.6	0.39068851	0.39071465	0.02818741	0.02812239
36.9	0.37951860	0.37954495	0.02859033	0.02852287
37.2	0.36851068	0.36853725	0.02900494	0.02893493
37.5	0.35766477	0.35769155	0.02943175	0.02935906
37.8	0.34698085	0.34700786	0.02987131	0.02979581
38.1	0.33645894	0.33648616	0.03032419	0.03024575
38.4	0.32609903	0.32612646	0.03079102	0.03070948
38.7	0.31590111	0.31592876	0.03127245	0.03118766
39.0	0.30586520	0.30589306	0.03176916	0.03168095
39.3	0.29599128	0.29601936	0.03228191	0.03219010

39.6	0.28627937	0.28630767	0.03281149	0.03271588
39.9	0.27672945	0.27675797	0.03335872	0.03325911
40.2	0.26734154	0.26737027	0.03392452	0.03382069
40.5	0.25811562	0.25814457	0.03450984	0.03440155
40.8	0.24905171	0.24908088	0.03511571	0.03500271
41.1	0.24014979	0.24017918	0.03574324	0.03562525
41.4	0.23140988	0.23143948	0.03639359	0.03627032
41.7	0.22283197	0.22286179	0.03706805	0.03693918
42.0	0.21441605	0.21444609	0.03776798	0.03763317
42.3	0.20616214	0.20619240	0.03849485	0.03835373
42.6	0.19807022	0.19810070	0.03925024	0.03910240
42.9	0.19014031	0.19017101	0.04003587	0.03988088
43.2	0.18237239	0.18240331	0.04085359	0.04069098
43.5	0.17476648	0.17479762	0.04170540	0.04153466
43.8	0.16732256	0.16735392	0.04259349	0.04241405
44.1	0.16004065	0.16007223	0.04352021	0.04333147
44.4	0.15292073	0.15295254	0.04448816	0.04428944
44.7	0.14596282	0.14599484	0.04550013	0.04529071
45.0	0.13916691	0.13919915	0.04655921	0.04633828
45.3	0.13253299	0.13256546	0.04766876	0.04743544
45.6	0.12606108	0.12609377	0.04883247	0.04858578
45.9	0.11975116	0.11978408	0.05005442	0.04979328
46.2	0.11360325	0.11363639	0.05133907	0.05106230
46.5	0.10761733	0.10765070	0.05269139	0.05239765
46.8	0.10179342	0.10182702	0.05411687	0.05380468
47.1	0.09613150	0.09616533	0.05562161	0.05528931
47.4	0.09063159	0.09066564	0.05721239	0.05685815
47.7	0.08529368	0.08532796	0.05889683	0.05851855
48.0	0.08011776	0.08015228	0.06068343	0.06027877
48.3	0.07510385	0.07513859	0.06258179	0.06214808

48.6	0.07025193	0.07028691	0.06460272	0.06413694
48.9	0.06556202	0.06559724	0.06675849	0.06625718
49.2	0.06103410	0.06106956	0.06906305	0.06852225
49.5	0.05666819	0.05670388	0.07153235	0.07094751
49.8	0.05246427	0.05250021	0.07418470	0.07355053
50.1	0.04842236	0.04845854	0.07704123	0.07635159
50.4	0.04454245	0.04457887	0.08012646	0.07937414
50.7	0.04082453	0.04086121	0.08346897	0.08264550
51.0	0.03726862	0.03730555	0.08710233	0.08619763
51.3	0.03387470	0.03391190	0.09106620	0.09006824
51.6	0.03064279	0.03068025	0.09540780	0.09430208
51.9	0.02757287	0.02761060	0.10018379	0.09895264
52.2	0.02466496	0.02470296	0.10546271	0.10408447
52.5	0.02191905	0.02195733	0.11132836	0.10977610
52.8	0.01933513	0.01937371	0.11788419	0.11612404
53.1	0.01691322	0.01695211	0.12525946	0.12324827
53.4	0.01465331	0.01469251	0.13361781	0.13129968
53.7	0.01255539	0.01259494	0.14316947	0.14047073
54.0	0.01061948	0.01065939	0.15418909	0.15101063
54.3	0.00884557	0.00888587	0.16704233	0.16324760
54.6	0.00723366	0.00727439	0.18222687	0.17762246
54.9	0.00578375	0.00582496	0.20043759	0.19474016
55.2	0.00449584	0.00453761	0.22267430	0.21545154
55.5	0.00336993	0.00341238	0.25042809	0.24098598
55.8	0.00240603	0.00244934	0.28602114	0.27317024
56.1	0.00160415	0.00164862	0.33326658	0.31478189
56.4	0.00096429	0.00101054	0.39884547	0.37001293
56.7	0.00048653	0.00053601	0.49538097	0.44405956
57.0	0.00017124	0.00022935	0.64782270	0.52831422
57.3	0.00002650	0.00009305	0.84688869	0.57146300

57.6	-0.00003378	-0.00000073	3.60405164	3.33223690
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Result for $h = 0.500000$

Time	RK4 Height	Heun Height	RK4 Error	Heun Error
0.0	2.94826348	2.94826446	0.01724551	0.01724518
0.5	2.89697695	2.89697892	0.01739550	0.01739484
1.0	2.84614043	2.84614338	0.01754813	0.01754711
1.5	2.79575390	2.79575783	0.01770346	0.01770208
2.0	2.74581738	2.74582229	0.01786156	0.01785980
2.5	2.69633085	2.69633675	0.01802251	0.01802036
3.0	2.64729433	2.64730121	0.01818639	0.01818384
3.5	2.59870781	2.59871567	0.01835328	0.01835031
4.0	2.55057128	2.55058013	0.01852325	0.01851985
4.5	2.50288476	2.50289459	0.01869641	0.01869255
5.0	2.45564823	2.45565905	0.01887283	0.01886851
5.5	2.40886171	2.40887351	0.01905262	0.01904781
6.0	2.36252519	2.36253797	0.01923586	0.01923055
6.5	2.31663866	2.31665243	0.01942266	0.01941683
7.0	2.27120214	2.27121689	0.01961313	0.01960676
7.5	2.22621561	2.22623135	0.01980736	0.01980043
8.0	2.18167909	2.18169581	0.02000549	0.01999798
8.5	2.13759256	2.13761027	0.02020761	0.02019950
9.0	2.09395604	2.09397473	0.02041386	0.02040512
9.5	2.05076952	2.05078919	0.02062437	0.02061497
10.0	2.00803299	2.00805365	0.02083926	0.02082919
10.5	1.96574647	1.96576811	0.02105868	0.02104790
11.0	1.92390994	1.92393257	0.02128277	0.02127126
11.5	1.88252342	1.88254703	0.02151167	0.02149940
12.0	1.84158689	1.84161149	0.02174556	0.02173249
12.5	1.80110037	1.80112595	0.02198459	0.02197069

13.0	1.76106385	1.76109042	0.02222892	0.02221417
13.5	1.72147732	1.72150488	0.02247876	0.02246311
14.0	1.68234080	1.68236934	0.02273427	0.02271769
14.5	1.64365427	1.64368380	0.02299565	0.02297810
15.0	1.60541775	1.60544826	0.02326312	0.02324455
15.5	1.56763123	1.56766273	0.02353688	0.02351726
16.0	1.53029470	1.53032719	0.02381716	0.02379644
16.5	1.49340818	1.49344165	0.02410420	0.02408232
17.0	1.45697165	1.45700611	0.02439824	0.02437516
17.5	1.42098513	1.42102058	0.02469954	0.02467521
18.0	1.38544860	1.38548504	0.02500837	0.02498273
18.5	1.35036208	1.35039950	0.02532503	0.02529801
19.0	1.31572556	1.31576397	0.02564980	0.02562136
19.5	1.28153903	1.28157843	0.02598302	0.02595307
20.0	1.24780251	1.24784290	0.02632501	0.02629349
20.5	1.21451598	1.21455736	0.02667612	0.02664295
21.0	1.18167946	1.18172183	0.02703672	0.02700183
21.5	1.14929293	1.14933629	0.02740720	0.02737051
22.0	1.11735641	1.11740076	0.02778798	0.02774939
22.5	1.08586989	1.08591522	0.02817948	0.02813891
23.0	1.05483336	1.05487969	0.02858218	0.02853951
23.5	1.02424684	1.02429416	0.02899655	0.02895169
24.0	0.99411031	0.99415862	0.02942311	0.02937594
24.5	0.96442379	0.96447309	0.02986240	0.02981281
25.0	0.93518727	0.93523756	0.03031502	0.03026287
25.5	0.90640074	0.90645203	0.03078156	0.03072672
26.0	0.87806422	0.87811650	0.03126269	0.03120501
26.5	0.85017769	0.85023096	0.03175909	0.03169842
27.0	0.82274117	0.82279543	0.03227152	0.03220769
27.5	0.79575464	0.79580990	0.03280075	0.03273358

28.0	0.76921812	0.76927437	0.03334762	0.03327693
28.5	0.74313160	0.74318885	0.03391304	0.03383861
29.0	0.71749507	0.71755332	0.03449796	0.03441958
29.5	0.69230855	0.69236779	0.03510341	0.03502084
30.0	0.66757202	0.66763226	0.03573049	0.03564348
30.5	0.64328550	0.64334674	0.03638038	0.03628865
31.0	0.61944897	0.61951121	0.03705435	0.03695760
31.5	0.59606245	0.59612569	0.03775375	0.03765167
32.0	0.57312593	0.57319016	0.03848007	0.03837230
32.5	0.55063940	0.55070464	0.03923487	0.03912104
33.0	0.52860288	0.52866912	0.04001988	0.03989958
33.5	0.50701635	0.50708360	0.04083694	0.04070973
34.0	0.48587983	0.48594808	0.04168805	0.04155344
34.5	0.46519331	0.46526256	0.04257539	0.04243285
35.0	0.44495678	0.44502704	0.04350132	0.04335028
35.5	0.42517026	0.42524153	0.04446841	0.04430824
36.0	0.40583373	0.40590601	0.04547948	0.04530948
36.5	0.38694721	0.38702050	0.04653759	0.04635700
37.0	0.36851069	0.36858499	0.04764609	0.04745407
37.5	0.35052416	0.35059948	0.04880868	0.04860430
38.0	0.33298764	0.33306397	0.05002942	0.04981166
38.5	0.31590111	0.31597846	0.05131278	0.05108049
39.0	0.29926459	0.29934296	0.05266370	0.05241561
39.5	0.28307806	0.28315746	0.05408766	0.05382236
40.0	0.26734154	0.26742196	0.05559075	0.05530666
40.5	0.25205502	0.25213646	0.05717974	0.05687508
41.0	0.23721849	0.23730097	0.05886223	0.05853500
41.5	0.22283197	0.22291548	0.06064671	0.06029465
42.0	0.20889544	0.20898000	0.06254273	0.06216329
42.5	0.19540892	0.19549452	0.06456110	0.06415135

43.0	0.18237240	0.18245904	0.06671405	0.06627065
43.5	0.16978587	0.16987357	0.06901548	0.06853463
44.0	0.15764935	0.15773810	0.07148132	0.07095859
44.5	0.14596283	0.14605264	0.07412982	0.07356010
45.0	0.13472630	0.13481719	0.07698205	0.07635937
45.5	0.12393978	0.12403175	0.08006245	0.07937982
46.0	0.11360325	0.11369631	0.08339951	0.08264869
46.5	0.10371673	0.10381089	0.08702670	0.08619789
47.0	0.09428021	0.09437547	0.09098354	0.09006502
47.5	0.08529368	0.08539008	0.09531708	0.09429470
48.0	0.07675716	0.07685469	0.10008377	0.09894030
48.5	0.06867064	0.06876933	0.10535189	0.10406614
49.0	0.06103412	0.06113399	0.11120489	0.10975051
49.5	0.05384759	0.05394868	0.11774577	0.11608962
50.0	0.04711107	0.04721340	0.12510321	0.12320297
50.5	0.04082455	0.04092816	0.13344006	0.13124089
51.0	0.03498803	0.03509297	0.14296547	0.14039504
51.5	0.02960151	0.02970784	0.15395256	0.15091347
52.0	0.02466499	0.02477280	0.16676485	0.16312285
52.5	0.02017848	0.02028787	0.18189684	0.17746162
53.0	0.01614197	0.01625310	0.20003861	0.19453126
53.5	0.01255546	0.01266854	0.22218242	0.21517726
54.0	0.00941896	0.00953430	0.24980691	0.24062057
54.5	0.00673248	0.00685058	0.28521269	0.27267438
55.0	0.00449603	0.00461774	0.33217312	0.31409460
55.5	0.00270967	0.00283666	0.39729012	0.36904401
56.0	0.00137356	0.00150979	0.49301842	0.44273343
56.5	0.00048871	0.00064870	0.64399268	0.52744943
57.0	0.00007943	0.00026666	0.83863450	0.56013198
57.5	-0.00009160	0.00000249	3.35047082	3.05140329

Result for $h = 0.700000$

Time	RK4 Height	Heun Height	RK4 Error	Heun Error
0.0	2.92769487	2.92769757	0.02410171	0.02410081
0.7	2.85627173	2.85627715	0.02439569	0.02439384
1.4	2.78573060	2.78573872	0.02469693	0.02469408
2.1	2.71607146	2.71608229	0.02500570	0.02500181
2.8	2.64729433	2.64730787	0.02532228	0.02531730
3.5	2.57939920	2.57941544	0.02564699	0.02564085
4.2	2.51238606	2.51240502	0.02598013	0.02597278
4.9	2.44625493	2.44627659	0.02632204	0.02631342
5.6	2.38100580	2.38103017	0.02667307	0.02666311
6.3	2.31663866	2.31666574	0.02703359	0.02702221
7.0	2.25315353	2.25318332	0.02740399	0.02739112
7.7	2.19055039	2.19058290	0.02778467	0.02777025
8.4	2.12882926	2.12886448	0.02817608	0.02816001
9.1	2.06799013	2.06802806	0.02857868	0.02856086
9.8	2.00803299	2.00807364	0.02899295	0.02897329
10.5	1.94895786	1.94900122	0.02941940	0.02939781
11.2	1.89076472	1.89081080	0.02985859	0.02983495
11.9	1.83345359	1.83350238	0.03031109	0.03028528
12.6	1.77702446	1.77707597	0.03077751	0.03074941
13.3	1.72147732	1.72153155	0.03125851	0.03122799
14.0	1.66681219	1.66686913	0.03175478	0.03172170
14.7	1.61302906	1.61308872	0.03226706	0.03223127
15.4	1.56012792	1.56019031	0.03279614	0.03275747
16.1	1.50810879	1.50817390	0.03334286	0.03330113
16.8	1.45697165	1.45703948	0.03390812	0.03386314
17.5	1.40671652	1.40678707	0.03449287	0.03444444
18.2	1.35734339	1.35741667	0.03509814	0.03504605

18.9	1.30885225	1.30892826	0.03572503	0.03566903
19.6	1.26124312	1.26132185	0.03637472	0.03631456
20.3	1.21451598	1.21459745	0.03704847	0.03698388
21.0	1.16867085	1.16875505	0.03774766	0.03767833
21.7	1.12370772	1.12379465	0.03847373	0.03839935
22.4	1.07962658	1.07971625	0.03922829	0.03914850
23.1	1.03642745	1.03651985	0.04001303	0.03992745
23.8	0.99411032	0.99420545	0.04082981	0.04073801
24.5	0.95267518	0.95277306	0.04168062	0.04158216
25.2	0.91212205	0.91222267	0.04256764	0.04246202
25.9	0.87245091	0.87255428	0.04349323	0.04337990
26.6	0.83366178	0.83376789	0.04445996	0.04433833
27.3	0.79575465	0.79586351	0.04547063	0.04534005
28.0	0.75872951	0.75884113	0.04652832	0.04638806
28.7	0.72258638	0.72270075	0.04763638	0.04748564
29.4	0.68732525	0.68744238	0.04879850	0.04863639
30.1	0.65294611	0.65306601	0.05001872	0.04984428
30.8	0.61944898	0.61957164	0.05130152	0.05111366
31.5	0.58683385	0.58695928	0.05265184	0.05244934
32.2	0.55510071	0.55522893	0.05407515	0.05385667
32.9	0.52424958	0.52438057	0.05557753	0.05534155
33.6	0.49428044	0.49441423	0.05716576	0.05691058
34.3	0.46519331	0.46532989	0.05884742	0.05857110
35.0	0.43698818	0.43712755	0.06063098	0.06033137
35.7	0.40966504	0.40980723	0.06252601	0.06220064
36.4	0.38322391	0.38336891	0.06454328	0.06418934
37.1	0.35766478	0.35781260	0.06669502	0.06630928
37.8	0.33298764	0.33313830	0.06899512	0.06857390
38.5	0.30919251	0.30934601	0.07145948	0.07099849
39.2	0.28627938	0.28643574	0.07410633	0.07360063

39.9	0.26424825	0.26440748	0.07695672	0.07640051
40.6	0.24309911	0.24326123	0.08003505	0.07942154
41.3	0.22283198	0.22299700	0.08336978	0.08269095
42.0	0.20344685	0.20361480	0.08699433	0.08624063
42.7	0.18494372	0.18511461	0.09094816	0.09010815
43.4	0.16732258	0.16749646	0.09527826	0.09433811
44.1	0.15058345	0.15076033	0.10004097	0.09898384
44.8	0.13472632	0.13490625	0.10530447	0.10410961
45.5	0.11975119	0.11993420	0.11115206	0.10979364
46.2	0.10565806	0.10584422	0.11768655	0.11613203
46.9	0.09244693	0.09263629	0.12503637	0.12324417
47.6	0.08011780	0.08031045	0.13336403	0.13128020
48.3	0.06867068	0.06886670	0.14287821	0.14043151
49.0	0.05810555	0.05830508	0.15385141	0.15094582
49.7	0.04842243	0.04862563	0.16664621	0.16314922
50.4	0.03962132	0.03982839	0.18175577	0.17747938
51.1	0.03170220	0.03191345	0.19986811	0.19453655
51.8	0.02466510	0.02488093	0.22197228	0.21516431
52.5	0.01851002	0.01873105	0.24954162	0.24058053
53.2	0.01323697	0.01346417	0.28486760	0.27259334
53.9	0.00884599	0.00908102	0.33170666	0.31395050
54.6	0.00533717	0.00558328	0.39662717	0.36880360
55.3	0.00271084	0.00297575	0.49201246	0.44236949
56.0	0.00096894	0.00128072	0.64236248	0.52728643
56.7	0.00016066	0.00052919	0.83514561	0.55588156
57.4	-0.00017755	0.00000854	3.25134926	2.94303170

Result for $h = 0.800000$

Time	RK4 Height	Heun Height	RK4 Error	Heun Error
0.0	2.91743756	2.91744161	0.02752081	0.02751946

0.8	2.83602712	2.83603522	0.02790477	0.02790200
1.6	2.75576868	2.75578083	0.02829960	0.02829532
2.4	2.67666225	2.67667844	0.02870576	0.02869989
3.2	2.59870781	2.59872805	0.02912375	0.02911619
4.0	2.52190537	2.52192966	0.02955409	0.02954474
4.8	2.44625493	2.44628328	0.02999733	0.02998609
5.6	2.37175649	2.37178889	0.03045408	0.03044083
6.4	2.29841005	2.29844651	0.03092494	0.03090957
7.2	2.22621561	2.22625612	0.03141060	0.03139297
8.0	2.15517317	2.15521774	0.03191175	0.03189173
8.8	2.08528274	2.08533136	0.03242915	0.03240659
9.6	2.01654430	2.01659698	0.03296361	0.03293834
10.4	1.94895786	1.94901460	0.03351597	0.03348783
11.2	1.88252342	1.88258423	0.03408716	0.03405596
12.0	1.81724098	1.81730585	0.03467815	0.03464369
12.8	1.75311054	1.75317948	0.03529000	0.03525207
13.6	1.69013210	1.69020511	0.03592383	0.03588218
14.4	1.62830567	1.62838274	0.03658083	0.03653523
15.2	1.56763123	1.56771237	0.03726231	0.03721248
16.0	1.50810879	1.50819401	0.03796967	0.03791531
16.8	1.44973835	1.44982764	0.03870439	0.03864519
17.6	1.39251991	1.39261328	0.03946811	0.03940371
18.4	1.33645347	1.33655092	0.04026257	0.04019259
19.2	1.28153903	1.28164057	0.04108967	0.04101370
20.0	1.22777660	1.22788221	0.04195146	0.04186905
20.8	1.17516616	1.17527587	0.04285017	0.04276081
21.6	1.12370772	1.12382152	0.04378822	0.04369138
22.4	1.07340128	1.07351918	0.04476826	0.04466334
23.2	1.02424684	1.02436884	0.04579316	0.04567951
24.0	0.97624440	0.97637050	0.04686608	0.04674297

24.8	0.92939396	0.92952417	0.04799048	0.04785710
25.6	0.88369553	0.88382984	0.04917014	0.04902562
26.4	0.83914909	0.83928752	0.05040925	0.05025260
27.2	0.79575465	0.79589720	0.05171242	0.05154254
28.0	0.75351221	0.75365889	0.05308474	0.05290041
28.8	0.71242177	0.71257259	0.05453187	0.05433172
29.6	0.67248333	0.67263829	0.05606009	0.05584259
30.4	0.63369690	0.63385600	0.05767642	0.05743983
31.2	0.59606246	0.59622572	0.05938869	0.05913106
32.0	0.55958002	0.55974745	0.06120572	0.06092483
32.8	0.52424958	0.52442118	0.06313740	0.06283074
33.6	0.49007114	0.49024693	0.06519496	0.06485964
34.4	0.45704471	0.45722469	0.06739109	0.06702382
35.2	0.42517027	0.42535447	0.06974028	0.06933726
36.0	0.39444783	0.39463625	0.07225911	0.07181594
36.8	0.36487739	0.36507006	0.07496663	0.07447818
37.6	0.33645896	0.33665589	0.07788486	0.07734514
38.4	0.30919252	0.30939373	0.08103937	0.08044134
39.2	0.28307808	0.28328360	0.08446006	0.08379537
40.0	0.25811565	0.25832550	0.08818209	0.08744076
40.8	0.23430521	0.23451943	0.09224709	0.09141714
41.6	0.21164677	0.21186540	0.09670469	0.09577161
42.4	0.19014034	0.19036341	0.10161464	0.10056065
43.2	0.16978590	0.17001348	0.10704939	0.10585252
44.0	0.15058347	0.15081560	0.11309775	0.11173054
44.8	0.13253304	0.13276980	0.11986972	0.11829741
45.6	0.11563460	0.11587609	0.12750325	0.12568117
46.4	0.09988817	0.10013449	0.13617365	0.13404353
47.2	0.08529375	0.08554503	0.14610715	0.14359151
48.0	0.07185132	0.07210775	0.15760083	0.15459446

48.8	0.05956090	0.05982270	0.17105254	0.16740896
49.6	0.04842249	0.04868996	0.18700743	0.18251669
50.4	0.03843608	0.03870965	0.20623277	0.20058308
51.2	0.02960169	0.02988197	0.22984299	0.22255091
52.0	0.02191933	0.02220723	0.25951906	0.24979311
52.8	0.01538902	0.01568604	0.29791530	0.28436488
53.6	0.01001083	0.01031959	0.34946483	0.32940070
54.4	0.00578492	0.00611082	0.42209575	0.38953873
55.2	0.00271199	0.00306913	0.53109991	0.46935026
56.0	0.00079740	0.00125361	0.70567905	0.53729207
56.8	0.00002643	0.00040386	0.98299228	0.80731099
57.6	-0.00040154	-0.00015726	30.79814979	54.38198903

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