

$u = \cos(\sqrt{\alpha}t) - \sin(\sqrt{\alpha}t)/\tan(\sqrt{\alpha})$ with DE $-u_{xx} - 800u = 0$ on $[0, 1]$

D6

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.991435e-001			0.000000e+000	0.000065
0.250000	9.994372e-001	-0.000588	-0.002481	0.000000e+000	0.000056
0.125000	9.805464e-001	0.028623	0.032466	0.000000e+000	0.000059
0.062500	1.002413e+000	-0.029407	-0.035886	0.000000e+000	0.000067
0.031250	1.011883e+000	-0.011753	-0.007936	0.000000e+000	0.000168
0.015625	1.157169e+000	-0.160996	-0.160558	0.000000e+000	0.000275
0.007813	1.077843e+000	0.082851	0.082885	0.000000e+000	0.000465
0.003906	5.833308e-002	3.333197	3.333125	0.000000e+000	0.002316
0.001953	1.569572e-002	1.476879	1.476800	0.000000e+000	0.012399
0.000977	7.192705e-003	0.867023	0.867003	0.000000e+000	0.072258

D8

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.997605e-001			0.000000e+000	0.000053
0.250000	9.994551e-001	0.000611	-0.001251	0.000000e+000	0.000057
0.125000	1.002807e+000	-0.005023	-0.001970	0.000000e+000	0.000080
0.062500	1.004990e+000	-0.002899	-0.005594	0.000000e+000	0.000073
0.031250	1.094252e+000	-0.106366	-0.105070	0.000000e+000	0.000120
0.015625	3.118451e-001	1.506384	1.506484	0.000000e+000	0.000203
0.007813	1.433907e-003	6.279121	6.279555	0.000000e+000	0.000727
0.003906	1.668167e-003	-0.172940	-0.173569	0.000000e+000	0.002306
0.001953	9.331996e-004	0.653469	0.653492	0.000000e+000	0.011180
0.000977	4.810830e-004	0.736199	0.736203	0.000000e+000	0.075436

D10

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.990054e-001			0.000000e+000	0.000094
0.250000	9.993894e-001	-0.000769	-0.003000	0.000000e+000	0.000115
0.125000	1.002226e+000	-0.004251	-0.001035	0.000000e+000	0.000070
0.062500	1.009402e+000	-0.009513	-0.011507	0.000000e+000	0.000091
0.031250	2.288569e+000	-1.023211	-1.022427	0.000000e+000	0.000134
0.015625	9.837200e-003	6.539413	6.539459	0.000000e+000	0.000233
0.007813	2.600524e-004	4.238550	4.238324	0.000000e+000	0.000537
0.003906	3.132980e-004	-0.212882	-0.212846	0.000000e+000	0.001920
0.001953	1.829415e-004	0.605237	0.605249	0.000000e+000	0.013215
0.000977	9.571875e-005	0.719725	0.719728	0.000000e+000	0.071656

D12

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.981162e-001			0.000000e+000	0.000090
0.250000	9.993382e-001	-0.002447	-0.005032	0.000000e+000	0.000088
0.125000	1.002179e+000	-0.004258	-0.000788	0.000000e+000	0.000078
0.062500	1.017061e+000	-0.019654	-0.021370	0.000000e+000	0.000141
0.031250	4.018435e-001	1.160762	1.161302	0.000000e+000	0.000149
0.015625	4.292376e-004	8.210169	8.210201	0.000000e+000	0.000253
0.007813	1.709029e-005	3.760750	3.760561	0.000000e+000	0.000846
0.003906	3.450074e-005	-0.802823	-0.802816	0.000000e+000	0.003153
0.001953	2.188429e-005	0.512113	0.512125	0.000000e+000	0.013776
0.000977	1.165710e-005	0.699838	0.699841	0.000000e+000	0.102727

D14

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.979933e-001			0.000000e+000	0.000075
0.250000	9.993043e-001	-0.002625	-0.005534	0.000000e+000	0.000075
0.125000	1.002246e+000	-0.004410	-0.000681	0.000000e+000	0.000088
0.062500	1.030652e+000	-0.037264	-0.038852	0.000000e+000	0.000132
0.031250	4.997414e-002	3.783052	3.783460	0.000000e+000	0.000228
0.015625	1.770241e-005	9.534672	9.534717	0.000000e+000	0.000379
0.007813	1.281466e-007	5.749661	5.749480	0.000000e+000	0.000892
0.003906	3.347477e-006	-3.728900	-3.728914	0.000000e+000	0.002060
0.001953	2.365436e-006	0.390650	0.390662	0.000000e+000	0.012667
0.000977	1.292211e-006	0.671786	0.671789	0.000000e+000	0.073285

D16

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.978505e-001			0.000000e+000	0.000086
0.250000	9.992756e-001	-0.002854	-0.006074	0.000000e+000	0.000089
0.125000	1.002345e+000	-0.004600	-0.000616	0.000000e+000	0.000117
0.062500	1.055306e+000	-0.068652	-0.070181	0.000000e+000	0.000124
0.031250	8.104397e-003	6.086474	6.086809	0.000000e+000	0.000161
0.015625	6.284297e-007	11.357632	11.357714	0.000000e+000	0.000287
0.007813	1.177967e-007	1.953308	1.953082	0.000000e+000	0.000711
0.003906	2.469845e-007	-0.846132	-0.846135	0.000000e+000	0.002170
0.001953	2.051267e-007	0.208910	0.208918	0.000000e+000	0.013310
0.000977	1.121219e-007	0.671157	0.671092	0.000000e+000	0.076063

D18

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.976945e-001			0.000000e+000	0.000124
0.250000	9.992514e-001	-0.003119	-0.006625	0.000000e+000	0.000103
0.125000	1.002448e+000	-0.004791	-0.000571	0.000000e+000	0.000112
0.062500	1.101411e+000	-0.125530	-0.127034	0.000000e+000	0.000145
0.031250	1.374880e-003	8.357476	8.357770	0.000000e+000	0.000194
0.015625	1.026480e-007	11.403086	11.402932	0.000000e+000	0.000306
0.007813	2.126298e-008	1.836728	1.836688	0.000000e+000	0.000700
0.003906	3.444381e-008	-0.551271	-0.551239	0.000000e+000	0.003042
0.001953	2.652091e-008	0.294070	0.294088	0.000000e+000	0.012506
0.000977	1.440469e-008	0.678199	0.678089	0.000000e+000	0.091511

D20

h	Euclidean Error	L2 CR	LInf CR	Condition Number	Average Computation time
0.500000	9.975611e-001			0.000000e+000	0.000138
0.250000	9.992312e-001	-0.003346	-0.007113	0.000000e+000	0.000113
0.125000	1.002548e+000	-0.004970	-0.000535	0.000000e+000	0.000124
0.062500	1.192450e+000	-0.231288	-0.232784	0.000000e+000	0.000187
0.031250	2.363307e-004	10.657860	10.658131	0.000000e+000	0.000195
0.015625	3.488729e-008	10.585038	10.584841	0.000000e+000	0.000316
0.007813	3.403941e-008	0.028704	0.028730	0.000000e+000	0.000743
0.003906	2.981969e-008	0.151257	0.151268	0.000000e+000	0.002358
0.001953	3.207539e-008	-0.082035	-0.082014	0.000000e+000	0.013662
0.000977	1.588380e-008	0.780877	0.780627	0.000000e+000	0.072398