

Regions	(a,b)=(0,1) (c,d)=(0,1)	(a,b)=(0,1) (c,d)=(0,1)	(a,b)=(-2,2) (c,d)=(0,1)	(a,b)=(0,4) (c,d)=(0,1)	(a,b)=(4,10) (c,d)=(0,1)
(MAXTERMS, MAXDEGREE)	(15,20)	(10,10)	(15,20)	(20,20)	(20,20)
Number of Subregions	2	17	4	4	1
Approximation Generation Time (s)	147.997	1977.65	343.361	372.447	52.931
$\ f\ _\infty$	2.00	2.00	10.89	2.00	1.00
Max Error ($\ f - approx\ _\infty / \max(\ f\ _\infty, 1)$)	3.00e-07	2.80e-06	2.19e-07	1.25e-06	4.58e-06
Original Maple Time (s)	173.031	173.031	195.968	195.672	150.729
evalf Time (s)	5.556	2.644	6.029	6.296	6.461
evalhf Time (s)	0.732	0.372	0.844	0.905	0.836
Compiled Time (s)	0.108	0.092	0.108	0.108	0.096
Speedup Factor (origMaple/evalf)	31.14	65.4	32.51	31.08	23.32
Speedup Factor (evalf/evalhf)	7.590	7.108	7.143	6.957	7.728
Speedup Factor (evalhf/compiled)	6.778	4.043	7.815	8.380	8.708
Overall Speedup (origMaple/compiled)	1602.0	1880.8	1814.5	1811.8	1570.1
Original Maple Plot Time (s)	31.777	46.930	28.605	29.577	21.433
Approximation Plot Time (s)	0.032	0.028	0.028	0.028	0.024
Plot Speedup Factor	993.1	1676.1	1021.6	1056.3	893.04

Table 7.11: Timings and Errors for Approximating $H(\alpha, x)$ Using Rational Approximation

Regions	(a,b)=(0,1) (c,d)=(0,1)	(a,b)=(-2,2) (c,d)=(0,1)	(a,b)=(-2,2) (c,d)=(0,1)	(a,b)=(0,4) (c,d)=(0,1)	(a,b)=(4,13) (c,d)=(0,1)
(MAXTERMS, MAXDEGREE)	(20,35)	(20,35)	(10,15)	(20,35)	(20,35)
Number of Subregions	2	4	31	4	10
Approximation Generation Time (s)	139.892	350.829	3723.06	371.103	1929.62
$\ f\ _\infty$	2.00	10.89	10.89	2.00	1.00
Max Error ($\ f - approx\ _\infty / \max(\ f\ _\infty, 1)$)	3.50e-07	2.17e-07	1.21e-06	1.18e-06	3.75e-06
Original Maple Time (s)	165.843	198.613	198.613	194.268	194.614
evalf Time (s)	3.944	5.996	7.621	4.816	6.592
evalhf Time (s)	0.488	0.620	0.432	0.556	0.561
Compiled Time (s)	0.084	0.104	0.100	0.096	0.100
Speedup Factor (origMaple/evalf)	42.04	33.12	26.06	40.34	29.52
Speedup Factor (evalf/evalhf)	8.082	9.671	17.64	8.662	11.75
Speedup Factor (evalhf/compiled)	5.810	5.962	4.320	5.792	5.610
Overall Speedup (origMaple/compiled)	1974.3	1909.7	1986.1	2023.6	1946.1
Original Maple Plot Time (s)	24.653	34.206	54.731	34.298	39.142
Approximation Plot Time (s)	0.028	0.032	0.032	0.028	0.028
Plot Speedup Factor	880.46	1068.9	1710.3	1224.9	1397.9

Table 7.12: Timings and Errors for Approximating $H(\alpha, x)$ Using Polynomial Approximation