

Regions	(a,b)=(0,1) (c,d)=($\frac{1}{1000}$,1)	(a,b)=(1,2) (c,d)=(3,4)	(a,b)=(1,2) (c,d)=(3,4)	(a,b)=(4,7) (c,d)=(2,4)	(a,b)=(0,10) (c,d)=($\frac{1}{4}$,10)	(a,b)=(0,10) (c,d)=(10,30)
(MAXTERMS, MAXDEGREE)	(15,10)	(15,15)	(8,8)	(15,10)	(15,15)	(15,15)
Number of Subregions	20	1	4	1	46	10
Approximation Generation Time (s)	222.525	7.216	22.093	15.072	514.120	163.974
$\ f\ _\infty$	636.62	0.42	0.42	271.55	1.24e14	0.36
Max Error ($\ f - approx\ _\infty / \max(\ f\ _\infty, 1)$)	3.30e-16	3.16e-15	5.21e-15	3.01e-15	4.27e-15	2.05e-15
Original Maple Time (s)	3.929	4.536	4.544	4.693	4.996	6.652
evalf Time (s)	14.853	10.745	9.321	21.109	33.258	33.162
evalhf Time (s)	1.428	1.144	0.896	2.008	2.952	2.884
Compiled Time (s)	0.136	0.116	0.108	0.184	0.232	0.228
Speedup Factor (origMaple/evalf)	-	-	-	-	-	-
Speedup Factor (evalf/evalhf)	10.40	9.388	10.40	10.51	11.27	11.50
Speedup Factor (evalhf/compiled)	10.50	9.862	8.296	10.91	12.72	12.65
Overall Speedup (origMaple/compiled)	28.89	39.10	42.07	25.51	21.53	29.18
Original Maple Plot Time (s)	0.532	0.632	0.792	0.852	0.716	0.832
Approximation Plot Time (s)	0.028	0.024	0.024	0.036	0.036	0.040
Plot Speedup Factor	19.00	26.33	33.00	23.67	19.89	20.80

Table 7.3: Timings and Errors for Approximating $Y_x(y)$ Using Rational Approximation

Regions	(a,b)=(0,1) (c,d)=($\frac{1}{100}$,1)	(a,b)=(1,2) (c,d)=(3,4)	(a,b)=(4,7) (c,d)=(2,4)	(a,b)=(1,6.5) (c,d)=(1,6.5)	(a,b)=(0,10) (c,d)=($\frac{1}{4}$,10)	(a,b)=(0,10) (c,d)=(10,30)
(MAXTERMS, MAXDEGREE)	(15,25)	(15,20)	(15,20)	(15,25)	(15,30)	(15,30)
Number of Subregions	7	1	2	7	47	10
Approximation Generation Time (s)	68.364	5.840	21.169	74.908	426.494	128.488
$\ f\ _\infty$	63.68	0.42	271.55	8.68e3	1.24e14	0.36
Max Error ($\ f - approx\ _\infty / \max(\ f\ _\infty, 1)$)	4.71e-16	3.53e-15	2.61e-15	4.47e-15	4.91e-15	2.20e-15
Original Maple Time (s)	4.104	4.588	4.824	4.696	4.896	6.948
evalf Time (s)	17.517	10.517	18.929	24.814	32.623	33.538
evalhf Time (s)	1.788	1.064	1.628	2.056	2.800	2.612
Compiled Time (s)	0.160	0.116	0.160	0.188	0.228	0.224
Speedup Factor (origMaple/evalf)	-	-	-	-	-	-
Speedup Factor (evalf/evalhf)	9.799	9.887	11.63	12.07	11.65	12.84
Speedup Factor (evalhf/compiled)	11.18	9.172	10.18	10.94	12.28	11.66
Overall Speedup (origMaple/compiled)	25.65	39.55	30.15	24.98	21.47	31.02
Original Maple Plot Time (s)	0.608	0.636	0.808	0.636	0.744	1.036
Approximation Plot Time (s)	0.032	0.024	0.144	0.032	0.208	0.040
Plot Speedup Factor	19.00	26.50	5.611	19.88	3.577	25.90

Table 7.4: Timings and Errors for Approximating $Y_x(y)$ Using Polynomial Approximation