

Table 6.8 DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS
 $x=1.0$

y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$
0.0	-0.57721 56649	0.00000	5.0	1.61278 48446	1.47080
0.1	-0.56529 77902	0.16342	5.1	1.63245 69889	1.47276
0.2	-0.53073 04055	0.32064	5.2	1.65175 20861	1.47464
0.3	-0.47675 48934	0.46653	5.3	1.67068 42228	1.47646
0.4	-0.40786 79442	0.59770	5.4	1.68926 67162	1.47820
0.5	-0.32888 63572	0.71269	5.5	1.70751 21687	1.47989
0.6	-0.24419 65809	0.81160	5.6	1.72543 25175	1.48151
0.7	-0.15733 61258	0.89563	5.7	1.74303 90807	1.48308
0.8	-0.07088 34022	0.96655	5.8	1.76034 25988	1.48459
0.9	+0.01345 20154	1.02628	5.9	1.77735 32733	1.48605
1.0	0.09465 03206	1.07667	6.0	1.79408 08018	1.48746
1.1	0.17219 05426	1.11938	6.1	1.81053 44105	1.48883
1.2	0.24588 65515	1.15580	6.2	1.82672 28842	1.49015
1.3	0.31576 20906	1.18707	6.3	1.84265 45939	1.49143
1.4	0.38196 28134	1.21413	6.4	1.85833 75219	1.49267
1.5	0.44469 79402	1.23772	6.5	1.87377 92858	1.49387
1.6	0.50420 34618	1.25843	6.6	1.88898 71602	1.49504
1.7	0.56072 00645	1.27675	6.7	1.90396 80964	1.49617
1.8	0.61448 06554	1.29306	6.8	1.91872 87422	1.49727
1.9	0.66570 39172	1.30766	6.9	1.93327 54582	1.49833
2.0	0.71459 15154	1.32081	7.0	1.94761 43346	1.49937
2.1	0.76132 74328	1.33271	7.1	1.96175 12062	1.50037
2.2	0.80607 84807	1.34353	7.2	1.97569 16663	1.50135
2.3	0.84899 54079	1.35341	7.3	1.98944 10799	1.50230
2.4	0.89021 42662	1.36246	7.4	2.00300 45959	1.50323
2.5	0.92985 78387	1.37080	7.5	2.01638 71585	1.50413
2.6	0.96803 70243	1.37849	7.6	2.02959 35177	1.50501
2.7	1.00485 21252	1.38561	7.7	2.04262 82397	1.50586
2.8	1.04039 40175	1.39222	7.8	2.05549 57159	1.50669
2.9	1.07474 51976	1.39838	7.9	2.06820 01717	1.50751
3.0	1.10798 07107	1.40413	8.0	2.08074 56749	1.50830
3.1	1.14016 89703	1.40951	8.1	2.09313 61434	1.50907
3.2	1.17137 24783	1.41455	8.2	2.10537 53524	1.50982
3.3	1.20164 84581	1.41928	8.3	2.11746 69410	1.51056
3.4	1.23104 94107	1.42374	8.4	2.12941 44191	1.51127
3.5	1.25962 36033	1.42794	8.5	2.14122 11731	1.51197
3.6	1.28741 54995	1.43191	8.6	2.15289 04718	1.51266
3.7	1.31446 61381	1.43566	8.7	2.16442 54716	1.51332
3.8	1.34081 34679	1.43922	8.8	2.17582 92217	1.51398
3.9	1.36649 26435	1.44259	8.9	2.18710 46687	1.51462
4.0	1.39153 62879	1.44580	9.0	2.19825 46616	1.51524
4.1	1.41597 47255	1.44885	9.1	2.20928 19555	1.51585
4.2	1.43983 61892	1.45175	9.2	2.22018 92160	1.51645
4.3	1.46314 70060	1.45452	9.3	2.23097 90229	1.51703
4.4	1.48593 17620	1.45716	9.4	2.24165 38740	1.51760
4.5	1.50821 34505	1.45969	9.5	2.25221 61882	1.51816
4.6	1.53001 36052	1.46210	9.6	2.26266 83093	1.51871
4.7	1.55135 24197	1.46441	9.7	2.27301 25085	1.51925
4.8	1.57224 88550	1.46663	9.8	2.28325 09877	1.51978
4.9	1.59272 07370	1.46876	9.9	2.29338 58823	1.52029
5.0	1.61278 48446	1.47080	10.0	2.30341 92637	1.52080

$$\left[\begin{matrix} (-3)2 \\ 5 \end{matrix} \right]$$

$$\left[\begin{matrix} (-5)5 \\ 6 \end{matrix} \right]$$

$$\left[\begin{matrix} (-5)1 \\ 2 \end{matrix} \right]$$

$$\Im\psi(1+iy) = \frac{1}{2}\pi \coth \pi y - \frac{1}{2y}$$

$\psi(z)$ to 5D, computed by M. Goldstein, Los Alamos Scientific Laboratory.

AUXILIARY FUNCTION FOR $\Re\psi(1+iy)$

y^{-1}	$f_4(y)$	$\langle y \rangle$	y^{-1}	$f_4(y)$	$\langle y \rangle$
0.11	0.00100 956	9	0.05	0.00020 839	20
0.10	0.00083 417	10	0.04	0.00013 335	25
0.09	0.00067 555	11	0.03	0.00007 501	33
0.08	0.00053 368	13	0.02	0.00003 333	50
0.07	0.00040 853	14	0.01	0.00000 833	100
0.06	0.00030 011	17	0.00	0.00000 000	∞
$\left[\begin{matrix} (-6)2 \\ 3 \end{matrix} \right]$		$\Re \psi(1+iy) = \ln y + f_4(y)$			
$\langle y \rangle = \text{nearest integer to } y.$					
$\left[\begin{matrix} (-6)2 \\ 3 \end{matrix} \right]$		$\left[\begin{matrix} (-6)2 \\ 3 \end{matrix} \right]$			

DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS

Table 6.8

$x=1.1$						$x=1.2$					
y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$
0.0	-0.42375	0.00000	5.0	1.61498	1.45097	0.0	-0.28904	0.00000	5.0	1.61756	1.43125
0.1	-0.41451	0.14258	5.1	1.63457	1.45332	0.1	-0.28169	0.12620	5.1	1.63705	1.43396
0.2	-0.38753	0.28082	5.2	1.65378	1.45557	0.2	-0.26014	0.24926	5.2	1.65617	1.43658
0.3	-0.34490	0.41099	5.3	1.67264	1.45774	0.3	-0.22578	0.36640	5.3	1.67494	1.43910
0.4	-0.28961	0.53042	5.4	1.69115	1.45983	0.4	-0.18064	0.47552	5.4	1.69336	1.44152
0.5	-0.22498	0.63764	5.5	1.70933	1.46184	0.5	-0.12710	0.57530	5.5	1.71146	1.44386
0.6	-0.15426	0.73229	5.6	1.72718	1.46378	0.6	-0.06753	0.66517	5.6	1.72924	1.44612
0.7	-0.08023	0.81484	5.7	1.74473	1.46565	0.7	-0.00412	0.74519	5.7	1.74672	1.44829
0.8	-0.00509	0.88630	5.8	1.76197	1.46746	0.8	+0.06130	0.81589	5.8	1.76390	1.45039
0.9	+0.06954	0.94792	5.9	1.77893	1.46921	0.9	0.12730	0.87806	5.9	1.78079	1.45243
1.0	0.14255	1.00102	6.0	1.79561	1.47090	1.0	0.19280	0.93260	6.0	1.79740	1.45439
1.1	0.21327	1.04687	6.1	1.81201	1.47253	1.1	0.25707	0.98046	6.1	1.81375	1.45629
1.2	0.28131	1.08660	6.2	1.82815	1.47411	1.2	0.31960	1.02252	6.2	1.82983	1.45813
1.3	0.34649	1.12119	6.3	1.84404	1.47565	1.3	0.38012	1.05960	6.3	1.84567	1.45991
1.4	0.40880	1.15146	6.4	1.85968	1.47713	1.4	0.43846	1.09240	6.4	1.86126	1.46164
1.5	0.46829	1.17810	6.5	1.87508	1.47857	1.5	0.49459	1.12153	6.5	1.87661	1.46331
1.6	0.52507	1.20169	6.6	1.89025	1.47996	1.6	0.54851	1.14752	6.6	1.89173	1.46493
1.7	0.57930	1.22269	6.7	1.90519	1.48132	1.7	0.60028	1.17082	6.7	1.90663	1.46651
1.8	0.63111	1.24148	6.8	1.91992	1.48263	1.8	0.64999	1.19179	6.8	1.92132	1.46803
1.9	0.68067	1.25839	6.9	1.93443	1.48391	1.9	0.69774	1.21074	6.9	1.93579	1.46952
2.0	0.72813	1.27368	7.0	1.94874	1.48515	2.0	0.74362	1.22794	7.0	1.95006	1.47096
2.1	0.77363	1.28755	7.1	1.96284	1.48635	2.1	0.78775	1.24362	7.1	1.96413	1.47236
2.2	0.81730	1.30021	7.2	1.97675	1.48752	2.2	0.83022	1.25796	7.2	1.97800	1.47372
2.3	0.85928	1.31179	7.3	1.99047	1.48866	2.3	0.87114	1.27112	7.3	1.99169	1.47505
2.4	0.89967	1.32243	7.4	2.00401	1.48977	2.4	0.91060	1.28323	7.4	2.00519	1.47634
2.5	0.93858	1.33224	7.5	2.01736	1.49085	2.5	0.94868	1.29442	7.5	2.01852	1.47760
2.6	0.97610	1.34131	7.6	2.03054	1.49190	2.6	0.98546	1.30478	7.6	2.03167	1.47882
2.7	1.01234	1.34972	7.7	2.04356	1.49292	2.7	1.02103	1.31441	7.7	2.04465	1.48001
2.8	1.04736	1.35753	7.8	2.05640	1.49392	2.8	1.05546	1.32337	7.8	2.05746	1.48117
2.9	1.08124	1.36482	7.9	2.06908	1.49489	2.9	1.08881	1.33173	7.9	2.07012	1.48230
3.0	1.11405	1.37162	8.0	2.08160	1.49584	3.0	1.12113	1.33955	8.0	2.08262	1.48341
3.1	1.14586	1.37800	8.1	2.09397	1.49676	3.1	1.15250	1.34688	8.1	2.09496	1.48448
3.2	1.17671	1.38398	8.2	2.10619	1.49767	3.2	1.18295	1.35377	8.2	2.10716	1.48553
3.3	1.20667	1.38960	8.3	2.11826	1.49855	3.3	1.21254	1.36024	8.3	2.11921	1.48656
3.4	1.23578	1.39489	8.4	2.13019	1.49940	3.4	1.24132	1.36635	8.4	2.13111	1.48756
3.5	1.26409	1.39989	8.5	2.14198	1.50024	3.5	1.26932	1.37211	8.5	2.14288	1.48853
3.6	1.29164	1.40461	8.6	2.15363	1.50106	3.6	1.29659	1.37756	8.6	2.15451	1.48949
3.7	1.31847	1.40907	8.7	2.16515	1.50186	3.7	1.32315	1.38272	8.7	2.16601	1.49042
3.8	1.34461	1.41331	8.8	2.17654	1.50265	3.8	1.34905	1.38761	8.8	2.17738	1.49133
3.9	1.37010	1.41732	8.9	2.18780	1.50341	3.9	1.37432	1.39226	8.9	2.18862	1.49222
4.0	1.39496	1.42114	9.0	2.19893	1.50416	4.0	1.39898	1.39667	9.0	2.19973	1.49310
4.1	1.41924	1.42478	9.1	2.20995	1.50489	4.1	1.42306	1.40088	9.1	2.21073	1.49395
4.2	1.44294	1.42824	9.2	2.22084	1.50561	4.2	1.44659	1.40489	9.2	2.22160	1.49478
4.3	1.46611	1.43154	9.3	2.23161	1.50631	4.3	1.46959	1.40871	9.3	2.23236	1.49560
4.4	1.48876	1.43469	9.4	2.24228	1.50699	4.4	1.49209	1.41236	9.4	2.24301	1.49640
4.5	1.51092	1.43771	9.5	2.25283	1.50766	4.5	1.51410	1.41586	9.5	2.25354	1.49718
4.6	1.53261	1.44059	9.6	2.26326	1.50832	4.6	1.53565	1.41920	9.6	2.26397	1.49794
4.7	1.55384	1.44335	9.7	2.27360	1.50896	4.7	1.55676	1.42240	9.7	2.27429	1.49869
4.8	1.57463	1.44600	9.8	2.28382	1.50960	4.8	1.57743	1.42547	9.8	2.28450	1.49943
4.9	1.59501	1.44854	9.9	2.29395	1.51021	4.9	1.59769	1.42842	9.9	2.29461	1.50015
5.0	1.61498	1.45097	10.0	2.30397	1.51082	5.0	1.61756	1.43125	10.0	2.30462	1.50085
	$\begin{bmatrix} (-3)2 \\ 5 \end{bmatrix}$	$\begin{bmatrix} (-3)2 \\ 5 \end{bmatrix}$		$\begin{bmatrix} (-5)5 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)1 \\ 2 \end{bmatrix}$		$\begin{bmatrix} (-3)1 \\ 5 \end{bmatrix}$	$\begin{bmatrix} (-3)1 \\ 5 \end{bmatrix}$		$\begin{bmatrix} (-5)5 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)1 \\ 2 \end{bmatrix}$

Table 6.8

DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS

$x=1.3$						$x=1.4$					
y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$
0.0	-0.16919	0.00000	5.0	1.62052	1.41163	0.0	-0.06138	0.00000	5.0	1.62386	1.39213
0.1	-0.16323	0.11303	5.1	1.63990	1.41472	0.1	-0.05646	0.10223	5.1	1.64311	1.39559
0.2	-0.14567	0.22372	5.2	1.65891	1.41769	0.2	-0.04192	0.20269	5.2	1.66200	1.39891
0.3	-0.11748	0.32997	5.3	1.67758	1.42055	0.3	-0.01844	0.29974	5.3	1.68055	1.40211
0.4	-0.08009	0.43011	5.4	1.69591	1.42331	0.4	+0.01295	0.39204	5.4	1.69878	1.40519
0.5	-0.03520	0.52298	5.5	1.71392	1.42597	0.5	0.05100	0.47862	5.5	1.71668	1.40817
0.6	+0.01541	0.60796	5.6	1.73161	1.42853	0.6	0.09436	0.55886	5.6	1.73428	1.41103
0.7	0.07003	0.68491	5.7	1.74900	1.43101	0.7	0.14171	0.63250	5.7	1.75158	1.41380
0.8	0.12718	0.75404	5.8	1.76611	1.43340	0.8	0.19183	0.69957	5.8	1.76860	1.41648
0.9	0.18561	0.81582	5.9	1.78292	1.43571	0.9	0.24367	0.76033	5.9	1.78533	1.41907
1.0	0.24434	0.87085	6.0	1.79947	1.43794	1.0	0.29635	0.81517	6.0	1.80180	1.42157
1.1	0.30262	0.91983	6.1	1.81575	1.44011	1.1	0.34918	0.86457	6.1	1.81800	1.42399
1.2	0.35994	0.96341	6.2	1.83177	1.44220	1.2	0.40163	0.90903	6.2	1.83395	1.42634
1.3	0.41593	1.00227	6.3	1.84754	1.44423	1.3	0.45331	0.94907	6.3	1.84966	1.42861
1.4	0.47035	1.03698	6.4	1.86308	1.44619	1.4	0.50395	0.98517	6.4	1.86513	1.43081
1.5	0.52310	1.06809	6.5	1.87837	1.44810	1.5	0.55336	1.01778	6.5	1.88036	1.43294
1.6	0.57409	1.09605	6.6	1.89344	1.44995	1.6	0.60144	1.04730	6.6	1.89537	1.43502
1.7	0.62333	1.12126	6.7	1.90829	1.45174	1.7	0.64811	1.07409	6.7	1.91017	1.43702
1.8	0.67084	1.14409	6.8	1.92293	1.45348	1.8	0.69337	1.09849	6.8	1.92475	1.43898
1.9	0.71667	1.16483	6.9	1.93735	1.45517	1.9	0.73722	1.12075	6.9	1.93912	1.44087
2.0	0.76087	1.18373	7.0	1.95158	1.45681	2.0	0.77968	1.14113	7.0	1.95330	1.44271
2.1	0.80353	1.20102	7.1	1.96560	1.45841	2.1	0.82078	1.15984	7.1	1.96727	1.44450
2.2	0.84470	1.21688	7.2	1.97944	1.45996	2.2	0.86058	1.17707	7.2	1.98106	1.44625
2.3	0.88447	1.23148	7.3	1.99309	1.46147	2.3	0.89913	1.19296	7.3	1.99467	1.44794
2.4	0.92290	1.24495	7.4	2.00655	1.46294	2.4	0.93647	1.20768	7.4	2.00809	1.44959
2.5	0.96007	1.25743	7.5	2.01984	1.46438	2.5	0.97265	1.22133	7.5	2.02134	1.45119
2.6	0.99604	1.26900	7.6	2.03296	1.46577	2.6	1.00775	1.23402	7.6	2.03442	1.45276
2.7	1.03088	1.27976	7.7	2.04591	1.46713	2.7	1.04179	1.24585	7.7	2.04733	1.45428
2.8	1.06464	1.28980	7.8	2.05869	1.46845	2.8	1.07484	1.25689	7.8	2.06008	1.45576
2.9	1.09739	1.29918	7.9	2.07131	1.46974	2.9	1.10693	1.26723	7.9	2.07267	1.45721
3.0	1.12917	1.30797	8.0	2.08378	1.47100	3.0	1.13813	1.27693	8.0	2.08510	1.45862
3.1	1.16004	1.31621	8.1	2.09610	1.47223	3.1	1.16846	1.28604	8.1	2.09739	1.46000
3.2	1.19005	1.32396	8.2	2.10827	1.47342	3.2	1.19797	1.29461	8.2	2.10952	1.46134
3.3	1.21923	1.33126	8.3	2.12029	1.47459	3.3	1.22670	1.30269	8.3	2.12151	1.46266
3.4	1.24763	1.33814	8.4	2.13217	1.47573	3.4	1.25469	1.31032	8.4	2.13337	1.46394
3.5	1.27529	1.34464	8.5	2.14391	1.47685	3.5	1.28196	1.31753	8.5	2.14508	1.46519
3.6	1.30223	1.35080	8.6	2.15552	1.47794	3.6	1.30855	1.32436	8.6	2.15666	1.46641
3.7	1.32851	1.35663	8.7	2.16700	1.47900	3.7	1.33450	1.33084	8.7	2.16811	1.46760
3.8	1.35413	1.36216	8.8	2.17834	1.48004	3.8	1.35983	1.33699	8.8	2.17943	1.46877
3.9	1.37915	1.36742	8.9	2.18956	1.48106	3.9	1.38456	1.34283	8.9	2.19063	1.46991
4.0	1.40357	1.37242	9.0	2.20066	1.48205	4.0	1.40873	1.34840	9.0	2.20170	1.47103
4.1	1.42744	1.37718	9.1	2.21163	1.48302	4.1	1.43235	1.35370	9.1	2.21265	1.47212
4.2	1.45077	1.38172	9.2	2.22249	1.48397	4.2	1.45546	1.35876	9.2	2.22349	1.47319
4.3	1.47358	1.38606	9.3	2.23323	1.48490	4.3	1.47806	1.36359	9.3	2.23421	1.47423
4.4	1.49590	1.39020	9.4	2.24386	1.48582	4.4	1.50019	1.36821	9.4	2.24481	1.47525
4.5	1.51775	1.39416	9.5	2.25437	1.48671	4.5	1.52185	1.37263	9.5	2.25531	1.47626
4.6	1.53914	1.39795	9.6	2.26478	1.48758	4.6	1.54307	1.37686	9.6	2.26570	1.47724
4.7	1.56010	1.40158	9.7	2.27508	1.48844	4.7	1.56387	1.38092	9.7	2.27598	1.47820
4.8	1.58064	1.40507	9.8	2.28528	1.48927	4.8	1.58425	1.38481	9.8	2.28616	1.47914
4.9	1.60078	1.40841	9.9	2.29537	1.49010	4.9	1.60425	1.38854	9.9	2.29623	1.48006
5.0	1.62052	1.41163	10.0	2.30537	1.49090	5.0	1.62386	1.39213	10.0	2.30621	1.48096
$\left[\begin{smallmatrix} (-3)2 \\ 5 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-3)1 \\ 5 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-5)5 \\ 3 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-5)2 \\ 3 \end{smallmatrix} \right]$		
$\left[\begin{smallmatrix} (-3)1 \\ 4 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-4)8 \\ 4 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-5)5 \\ 3 \end{smallmatrix} \right]$			$\left[\begin{smallmatrix} (-5)2 \\ 3 \end{smallmatrix} \right]$		

DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS

Table 6.8

 $x=1.5$ $x=1.6$

y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$
0.0	0.03649	0.00000	5.0	1.62756	1.37278	0.0	0.12605	0.00000	5.0	1.63162	1.35357
0.1	0.04062	0.09325	5.1	1.64667	1.37658	0.1	0.12955	0.08566	5.1	1.65057	1.35773
0.2	0.05284	0.18511	5.2	1.66543	1.38025	0.2	0.13995	0.17023	5.2	1.66919	1.36173
0.3	0.07266	0.27432	5.3	1.68386	1.38378	0.3	0.15687	0.25268	5.3	1.68748	1.36558
0.4	0.09932	0.35978	5.4	1.70196	1.38719	0.4	0.17976	0.33214	5.4	1.70546	1.36930
0.5	0.13189	0.44066	5.5	1.71976	1.39047	0.5	0.20790	0.40789	5.5	1.72313	1.37289
0.6	0.16935	0.51640	5.6	1.73725	1.39364	0.6	0.24050	0.47942	5.6	1.74051	1.37635
0.7	0.21064	0.58668	5.7	1.75445	1.39670	0.7	0.27674	0.54642	5.7	1.75760	1.37969
0.8	0.25479	0.65144	5.8	1.77137	1.39965	0.8	0.31581	0.60875	5.8	1.77441	1.38293
0.9	0.30091	0.71078	5.9	1.78801	1.40251	0.9	0.35697	0.66642	5.9	1.79095	1.38605
1.0	0.34824	0.76494	6.0	1.80439	1.40528	1.0	0.39957	0.71957	6.0	1.80724	1.38908
1.1	0.39614	0.81424	6.1	1.82051	1.40796	1.1	0.44305	0.76840	6.1	1.82327	1.39200
1.2	0.44411	0.85907	6.2	1.83638	1.41055	1.2	0.48692	0.81319	6.2	1.83906	1.39484
1.3	0.49175	0.89980	6.3	1.85201	1.41306	1.3	0.53082	0.85423	6.3	1.85460	1.39759
1.4	0.53878	0.93684	6.4	1.86741	1.41549	1.4	0.57445	0.89183	6.4	1.86992	1.40025
1.5	0.58497	0.97054	6.5	1.88258	1.41786	1.5	0.61757	0.92629	6.5	1.88501	1.40284
1.6	0.63018	1.00127	6.6	1.89752	1.42015	1.6	0.66001	0.95790	6.6	1.89989	1.40534
1.7	0.67432	1.02932	6.7	1.91225	1.42237	1.7	0.70167	0.98693	6.7	1.91455	1.40778
1.8	0.71732	1.05500	6.8	1.92677	1.42453	1.8	0.74244	1.01363	6.8	1.92900	1.41014
1.9	0.75916	1.07855	6.9	1.94109	1.42663	1.9	0.78228	1.03824	6.9	1.94326	1.41244
2.0	0.79983	1.10020	7.0	1.95521	1.42866	2.0	0.82115	1.06096	7.0	1.95731	1.41467
2.1	0.83935	1.12015	7.1	1.96914	1.43065	2.1	0.85905	1.08197	7.1	1.97118	1.41684
2.2	0.87772	1.13857	7.2	1.98287	1.43257	2.2	0.89597	1.10144	7.2	1.98487	1.41895
2.3	0.91499	1.15563	7.3	1.99643	1.43445	2.3	0.93193	1.11953	7.3	1.99837	1.42101
2.4	0.95118	1.17146	7.4	2.00981	1.43628	2.4	0.96694	1.13635	7.4	2.01169	1.42301
2.5	0.98634	1.18618	7.5	2.02301	1.43805	2.5	1.00102	1.15204	7.5	2.02485	1.42496
2.6	1.02050	1.19990	7.6	2.03604	1.43978	2.6	1.03421	1.16668	7.6	2.03784	1.42686
2.7	1.05370	1.21271	7.7	2.04891	1.44147	2.7	1.06653	1.18039	7.7	2.05066	1.42871
2.8	1.08598	1.22469	7.8	2.06162	1.44312	2.8	1.09801	1.19324	7.8	2.06332	1.43051
2.9	1.11738	1.23592	7.9	2.07417	1.44472	2.9	1.12867	1.20530	7.9	2.07583	1.43227
3.0	1.14794	1.24647	8.0	2.08657	1.44628	3.0	1.15856	1.21664	8.0	2.08819	1.43398
3.1	1.17769	1.25639	8.1	2.09882	1.44781	3.1	1.18770	1.22733	8.1	2.10040	1.43565
3.2	1.20667	1.26574	8.2	2.11092	1.44930	3.2	1.21611	1.23741	8.2	2.11246	1.43728
3.3	1.23491	1.27457	8.3	2.12288	1.45075	3.3	1.24383	1.24693	8.3	2.12439	1.43888
3.4	1.26245	1.28290	8.4	2.13470	1.45217	3.4	1.27089	1.25594	8.4	2.13617	1.44043
3.5	1.28931	1.29080	8.5	2.14638	1.45355	3.5	1.29731	1.26448	8.5	2.14782	1.44195
3.6	1.31552	1.29828	8.6	2.15794	1.45491	3.6	1.32311	1.27257	8.6	2.15934	1.44344
3.7	1.34112	1.30537	8.7	2.16936	1.45623	3.7	1.34833	1.28026	8.7	2.17073	1.44489
3.8	1.36612	1.31212	8.8	2.18065	1.45753	3.8	1.37297	1.28757	8.8	2.18199	1.44631
3.9	1.39055	1.31853	8.9	2.19182	1.45879	3.9	1.39707	1.29454	8.9	2.19313	1.44770
4.0	1.41443	1.32464	9.0	2.20286	1.46003	4.0	1.42065	1.30117	9.0	2.20415	1.44905
4.1	1.43779	1.33047	9.1	2.21379	1.46124	4.1	1.44373	1.30750	9.1	2.21504	1.45038
4.2	1.46065	1.33603	9.2	2.22460	1.46242	4.2	1.46632	1.31354	9.2	2.22583	1.45168
4.3	1.48302	1.34134	9.3	2.23530	1.46358	4.3	1.48844	1.31932	9.3	2.23650	1.45295
4.4	1.50493	1.34642	9.4	2.24588	1.46471	4.4	1.51012	1.32485	9.4	2.24706	1.45420
4.5	1.52639	1.35128	9.5	2.25635	1.46582	4.5	1.53136	1.33014	9.5	2.25751	1.45542
4.6	1.54742	1.35594	9.6	2.26672	1.46691	4.6	1.55219	1.33522	9.6	2.26785	1.45661
4.7	1.56804	1.36041	9.7	2.27698	1.46798	4.7	1.57262	1.34009	9.7	2.27809	1.45778
4.8	1.58826	1.36470	9.8	2.28714	1.46902	4.8	1.59265	1.34476	9.8	2.28822	1.45892
4.9	1.60810	1.36882	9.9	2.29720	1.47004	4.9	1.61232	1.34925	9.9	2.29826	1.46005
5.0	1.62756	1.37278	10.0	2.30716	1.47105	5.0	1.63162	1.35357	10.0	2.30820	1.46115

$$\mathcal{J}\psi(1.5+iy) = \frac{1}{2}\pi \tanh \pi y - \frac{4y}{4y^2+1}$$

Table 6.8

DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS

 $x=1.7$ $x=1.8$

y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$	y	$\Re\psi(z)$	$\Im\psi(z)$
0.0	0.20855	0.00000	5.0	1.63603	1.33453	0.0	0.28499	0.00000	5.0	1.64078	1.31566
0.1	0.21156	0.07918	5.1	1.65482	1.33902	0.1	0.28760	0.07358	5.1	1.65939	1.32048
0.2	0.22050	0.15747	5.2	1.67328	1.34335	0.2	0.29537	0.14644	5.2	1.67769	1.32513
0.3	0.23511	0.23407	5.3	1.69142	1.34752	0.3	0.30809	0.21792	5.3	1.69567	1.32961
0.4	0.25494	0.30824	5.4	1.70926	1.35154	0.4	0.32541	0.28740	5.4	1.71336	1.33393
0.5	0.27945	0.37937	5.5	1.72680	1.35543	0.5	0.34693	0.35437	5.5	1.73076	1.33810
0.6	0.30803	0.44701	5.6	1.74405	1.35918	0.6	0.37215	0.41842	5.6	1.74787	1.34213
0.7	0.34001	0.51086	5.7	1.76102	1.36280	0.7	0.40053	0.47928	5.7	1.76472	1.34603
0.8	0.37474	0.57074	5.8	1.77772	1.36630	0.8	0.43155	0.53675	5.8	1.78130	1.34979
0.9	0.41161	0.62661	5.9	1.79416	1.36969	0.9	0.46469	0.59076	5.9	1.79762	1.35344
1.0	0.45005	0.67852	6.0	1.81034	1.37297	1.0	0.49947	0.64131	6.0	1.81369	1.35697
1.1	0.48957	0.72661	6.1	1.82627	1.37614	1.1	0.53546	0.68847	6.1	1.82952	1.36038
1.2	0.52973	0.77107	6.2	1.84196	1.37922	1.2	0.57226	0.73237	6.2	1.84511	1.36369
1.3	0.57018	0.81211	6.3	1.85742	1.38220	1.3	0.60955	0.77316	6.3	1.86047	1.36690
1.4	0.61063	0.84996	6.4	1.87266	1.38509	1.4	0.64706	0.81103	6.4	1.87561	1.37001
1.5	0.65085	0.88488	6.5	1.88767	1.38789	1.5	0.68455	0.84617	6.5	1.89053	1.37303
1.6	0.69065	0.91710	6.6	1.90246	1.39061	1.6	0.72184	0.87877	6.6	1.90525	1.37596
1.7	0.72990	0.94685	6.7	1.91705	1.39326	1.7	0.75879	0.90903	6.7	1.91975	1.37881
1.8	0.76849	0.97436	6.8	1.93143	1.39582	1.8	0.79528	0.93713	6.8	1.93406	1.38158
1.9	0.80636	0.99982	6.9	1.94562	1.39832	1.9	0.83122	0.96326	6.9	1.94817	1.38426
2.0	0.84345	1.02342	7.0	1.95961	1.40074	2.0	0.86655	0.98757	7.0	1.96210	1.38688
2.1	0.87973	1.04533	7.1	1.97342	1.40310	2.1	0.90123	1.01022	7.1	1.97583	1.38942
2.2	0.91519	1.06570	7.2	1.98704	1.40539	2.2	0.93523	1.03136	7.2	1.98939	1.39189
2.3	0.94981	1.08468	7.3	2.00048	1.40762	2.3	0.96853	1.05110	7.3	2.00277	1.39430
2.4	0.98362	1.10238	7.4	2.01375	1.40980	2.4	1.00111	1.06957	7.4	2.01598	1.39664
2.5	1.01661	1.11893	7.5	2.02685	1.41191	2.5	1.03299	1.08687	7.5	2.02903	1.39892
2.6	1.04879	1.13441	7.6	2.03979	1.41398	2.6	1.06416	1.10310	7.6	2.04191	1.40115
2.7	1.08020	1.14893	7.7	2.05256	1.41599	2.7	1.09463	1.11836	7.7	2.05463	1.40332
2.8	1.11084	1.16257	7.8	2.06518	1.41794	2.8	1.12442	1.13270	7.8	2.06719	1.40543
2.9	1.14075	1.17539	7.9	2.07764	1.41986	2.9	1.15353	1.14622	7.9	2.07960	1.40749
3.0	1.16993	1.18747	8.0	2.08996	1.42172	3.0	1.18200	1.15898	8.0	2.09187	1.40950
3.1	1.19842	1.19886	8.1	2.10212	1.42354	3.1	1.20982	1.17103	8.1	2.10399	1.41146
3.2	1.22625	1.20962	8.2	2.11415	1.42531	3.2	1.23703	1.18243	8.2	2.11597	1.41338
3.3	1.25342	1.21981	8.3	2.12603	1.42704	3.3	1.26363	1.19322	8.3	2.12781	1.41525
3.4	1.27997	1.22945	8.4	2.13778	1.42874	3.4	1.28965	1.20345	8.4	2.13952	1.41708
3.5	1.30592	1.23859	8.5	2.14939	1.43039	3.5	1.31511	1.21317	8.5	2.15109	1.41886
3.6	1.33129	1.24727	8.6	2.16087	1.43200	3.6	1.34003	1.22241	8.6	2.16253	1.42061
3.7	1.35610	1.25553	8.7	2.17222	1.43358	3.7	1.36441	1.23119	8.7	2.17385	1.42231
3.8	1.38037	1.26338	8.8	2.18345	1.43513	3.8	1.38829	1.23956	8.8	2.18504	1.42398
3.9	1.40413	1.27087	8.9	2.19456	1.43664	3.9	1.41168	1.24754	8.9	2.19611	1.42561
4.0	1.42738	1.27800	9.0	2.20555	1.43811	4.0	1.43459	1.25516	9.0	2.20707	1.42720
4.1	1.45015	1.28481	9.1	2.21642	1.43956	4.1	1.45704	1.26243	9.1	2.21790	1.42876
4.2	1.47246	1.29132	9.2	2.22717	1.44097	4.2	1.47904	1.26939	9.2	2.22862	1.43029
4.3	1.49432	1.29755	9.3	2.23781	1.44235	4.3	1.50062	1.27605	9.3	2.23923	1.43178
4.4	1.51574	1.30351	9.4	2.24834	1.44371	4.4	1.52178	1.28242	9.4	2.24974	1.43324
4.5	1.53675	1.30922	9.5	2.25877	1.44503	4.5	1.54254	1.28854	9.5	2.26013	1.43468
4.6	1.55736	1.31470	9.6	2.26908	1.44633	4.6	1.56292	1.29440	9.6	2.27042	1.43608
4.7	1.57758	1.31996	9.7	2.27930	1.44760	4.7	1.58291	1.30004	9.7	2.28061	1.43745
4.8	1.59742	1.32501	9.8	2.28941	1.44885	4.8	1.60255	1.30545	9.8	2.29069	1.43880
4.9	1.61690	1.32986	9.9	2.29942	1.45007	4.9	1.62183	1.31065	9.9	2.30068	1.44012
5.0	1.63603	1.33453	10.0	2.30933	1.45127	5.0	1.64078	1.31566	10.0	2.31057	1.44142
	$\begin{bmatrix} (-4)7 \\ 4 \end{bmatrix}$	$\begin{bmatrix} (-4)5 \\ 4 \end{bmatrix}$		$\begin{bmatrix} (-5)4 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)2 \\ 3 \end{bmatrix}$		$\begin{bmatrix} (-4)6 \\ 4 \end{bmatrix}$	$\begin{bmatrix} (-4)4 \\ 4 \end{bmatrix}$		$\begin{bmatrix} (-5)4 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)2 \\ 3 \end{bmatrix}$

*

DIGAMMA FUNCTION FOR COMPLEX ARGUMENTS

Table 6.8

$x=1.9$						$x=2.0$					
y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$	y	$\Re \psi(z)$	$\Im \psi(z)$
0.0	0.35618	0.00000	5.0	1.64585	1.29698	0.0	0.42278	0.00000	5.0	1.65125	1.27849
0.1	0.35847	0.06870	5.1	1.66428	1.30212	0.1	0.42480	0.06441	5.1	1.66948	1.28394
0.2	0.36528	0.13681	5.2	1.68240	1.30707	0.2	0.43081	0.12833	5.2	1.68742	1.28919
0.3	0.37644	0.20377	5.3	1.70022	1.31185	0.3	0.44068	0.19130	5.3	1.70506	1.29426
0.4	0.39169	0.26908	5.4	1.71775	1.31647	0.4	0.45420	0.25288	5.4	1.72242	1.29916
0.5	0.41071	0.33229	5.5	1.73500	1.32092	0.5	0.47111	0.31269	5.5	1.73951	1.30389
0.6	0.43309	0.39306	5.6	1.75197	1.32522	0.6	0.49110	0.37042	5.6	1.75633	1.30846
0.7	0.45842	0.45110	5.7	1.76868	1.32938	0.7	0.51380	0.42583	5.7	1.77290	1.31288
0.8	0.48625	0.50624	5.8	1.78513	1.33341	0.8	0.53887	0.47874	5.8	1.78921	1.31715
0.9	0.51614	0.55838	5.9	1.80133	1.33730	0.9	0.56594	0.52904	5.9	1.80528	1.32129
1.0	0.54770	0.60749	6.0	1.81728	1.34107	1.0	0.59465	0.57667	6.0	1.82111	1.32530
1.1	0.58053	0.65359	6.1	1.83300	1.34473	1.1	0.62468	0.62165	6.1	1.83671	1.32918
1.2	0.61431	0.69677	6.2	1.84848	1.34827	1.2	0.65572	0.66400	6.2	1.85208	1.33295
1.3	0.64872	0.73714	6.3	1.86374	1.35170	1.3	0.68751	0.70380	6.3	1.86723	1.33660
1.4	0.68351	0.77483	6.4	1.87878	1.35503	1.4	0.71980	0.74116	6.4	1.88217	1.34015
1.5	0.71846	0.80999	6.5	1.89361	1.35826	1.5	0.75239	0.77618	6.5	1.89690	1.34358
1.6	0.75338	0.84278	6.6	1.90824	1.36140	1.6	0.78510	0.80899	6.6	1.91143	1.34692
1.7	0.78814	0.87335	6.7	1.92266	1.36445	1.7	0.81779	0.83973	6.7	1.92576	1.35017
1.8	0.82261	0.90188	6.8	1.93688	1.36741	1.8	0.85033	0.86853	6.8	1.93990	1.35332
1.9	0.85669	0.92851	6.9	1.95092	1.37029	1.9	0.88262	0.89551	6.9	1.95385	1.35639
2.0	0.89031	0.95338	7.0	1.96476	1.37308	2.0	0.91459	0.92081	7.0	1.96761	1.35937
2.1	0.92342	0.97664	7.1	1.97843	1.37581	2.1	0.94617	0.94454	7.1	1.98120	1.36227
2.2	0.95598	0.99840	7.2	1.99192	1.37846	2.2	0.97731	0.96681	7.2	1.99462	1.36509
2.3	0.98795	1.01879	7.3	2.00523	1.38104	2.3	1.00798	0.98775	7.3	2.00786	1.36784
2.4	1.01932	1.03792	7.4	2.01838	1.38355	2.4	1.03814	1.00743	7.4	2.02094	1.37052
2.5	1.05008	1.05588	7.5	2.03136	1.38599	2.5	1.06779	1.02597	7.5	2.03385	1.37313
2.6	1.08022	1.07278	7.6	2.04418	1.38838	2.6	1.09690	1.04344	7.6	2.04661	1.37567
2.7	1.10975	1.08868	7.7	2.05684	1.39070	2.7	1.12548	1.05992	7.7	2.05921	1.37815
2.8	1.13867	1.10367	7.8	2.06935	1.39297	2.8	1.15352	1.07548	7.8	2.07167	1.38056
2.9	1.16698	1.11782	7.9	2.08171	1.39518	2.9	1.18102	1.09020	7.9	2.08397	1.38292
3.0	1.19470	1.13119	8.0	2.09393	1.39734	3.0	1.20798	1.10413	8.0	2.09613	1.38522
3.1	1.22184	1.14384	8.1	2.10600	1.39944	3.1	1.23442	1.11733	8.1	2.10815	1.38746
3.2	1.24841	1.15583	8.2	2.11793	1.40149	3.2	1.26034	1.12985	8.2	2.12003	1.38966
3.3	1.27442	1.16719	8.3	2.12973	1.40350	3.3	1.28575	1.14174	8.3	2.13178	1.39180
3.4	1.29990	1.17798	8.4	2.14139	1.40546	3.4	1.31067	1.15304	8.4	2.14339	1.39389
3.5	1.32485	1.18823	8.5	2.15292	1.40738	3.5	1.33510	1.16379	8.5	2.15487	1.39593
3.6	1.34929	1.19798	8.6	2.16432	1.40925	3.6	1.35905	1.17403	8.6	2.16623	1.39793
3.7	1.37324	1.20727	8.7	2.17560	1.41108	3.7	1.38254	1.18379	8.7	2.17746	1.39988
3.8	1.39670	1.21613	8.8	2.18675	1.41286	3.8	1.40558	1.19310	8.8	2.18858	1.40179
3.9	1.41970	1.22458	8.9	2.19778	1.41461	3.9	1.42818	1.20200	8.9	2.19957	1.40366
4.0	1.44226	1.23265	9.0	2.20870	1.41632	4.0	1.45036	1.21050	9.0	2.21045	1.40548
4.1	1.46437	1.24037	9.1	2.21950	1.41800	4.1	1.47212	1.21864	9.1	2.22121	1.40727
4.2	1.48606	1.24775	9.2	2.23019	1.41964	4.2	1.49348	1.22643	9.2	2.23187	1.40902
4.3	1.50734	1.25482	9.3	2.24077	1.42124	4.3	1.51446	1.23389	9.3	2.24241	1.41074
4.4	1.52822	1.26160	9.4	2.25124	1.42281	4.4	1.53505	1.24105	9.4	2.25284	1.41241
4.5	1.54872	1.26810	9.5	2.26160	1.42435	4.5	1.55527	1.24792	9.5	2.26318	1.41406
4.6	1.56885	1.27434	9.6	2.27186	1.42586	4.6	1.57514	1.25452	9.6	2.27340	1.41566
4.7	1.58861	1.28033	9.7	2.28202	1.42733	4.7	1.59466	1.26086	9.7	2.28353	1.41724
4.8	1.60803	1.28610	9.8	2.29207	1.42878	4.8	1.61385	1.26696	9.8	2.29356	1.41879
4.9	1.62710	1.29164	9.9	2.30203	1.43020	4.9	1.63270	1.27283	9.9	2.30349	1.42030
5.0	1.64585	1.29698	10.0	2.31190	1.43159	5.0	1.65125	1.27849	10.0	2.31332	1.42179
	$\begin{bmatrix} (-4)6 \\ 4 \end{bmatrix}$	$\begin{bmatrix} (-4)4 \\ 4 \end{bmatrix}$		$\begin{bmatrix} (-5)4 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)2 \\ 3 \end{bmatrix}$		$\begin{bmatrix} (-4)5 \\ 4 \end{bmatrix}$	$\begin{bmatrix} (-4)3 \\ 4 \end{bmatrix}$		$\begin{bmatrix} (-5)4 \\ 3 \end{bmatrix}$	$\begin{bmatrix} (-5)3 \\ 3 \end{bmatrix}$

$$\Im \psi(2+iy) = \frac{1}{2}\pi \coth \pi y - \frac{1+3y^2}{2y(1+y^2)}$$