

GAMMA AND DIGAMMA FUNCTIONS FOR INTEGER AND HALF-INTEGER VALUES Table 6.3

n	$\Gamma(n)$	$1/\Gamma(n)$	$\Gamma(n+\frac{1}{2})$	$\psi(n)$	$f_1(n)$	$f_3(n)$
51	(64) 3.04140 93202	(-65) 3.28794 942	(65) 2.16668 38	3.92198 96734	1.00163 530	0.00983 596
52	(66) 1.55111 87533	(-67) 6.44695 964	(67) 1.11584 21	3.94159 75166	1.00160 383	0.00964 620
53	(67) 8.06581 75171	(-68) 1.23979 993	(68) 5.85817 12	3.96082 82858	1.00157 355	0.00946 363
54	(69) 4.27488 32841	(-70) 2.33924 515	(70) 3.13412 16	3.97969 62103	1.00154 438	0.00928 784
55	(71) 2.30843 69734	(-72) 4.33193 547	(72) 1.70809 63	3.99821 47288	1.00151 628	0.00911 846
56	(73) 1.26964 03354	(-74) 7.87624 631	(73) 9.47993 44	4.01639 65470	1.00148 919	0.00895 514
57	(74) 7.10998 58780	(-75) 1.40647 255	(75) 5.35616 29	4.03425 36899	1.00146 304	0.00879 758
58	(76) 4.05269 19505	(-77) 2.46749 571	(77) 3.07979 37	4.05179 75495	1.00143 780	0.00864 546
59	(78) 2.35056 13313	(-79) 4.25430 295	(79) 1.80167 93	4.06903 89288	1.00141 341	0.00849 852
60	(80) 1.38683 11855	(-81) 7.21068 296	(81) 1.07199 92	4.08598 80814	1.00138 984	0.00835 648
61	(81) 8.32098 71127	(-82) 1.20178 049	(82) 6.48559 51	4.10265 47481	1.00136 704	0.00821 912
62	(83) 5.07580 21388	(-84) 1.97013 196	(84) 3.98864 10	4.11904 81907	1.00134 498	0.00808 619
63	(85) 3.14699 73260	(-86) 3.17763 219	(86) 2.49290 06	4.13517 72229	1.00132 362	0.00795 750
64	(87) 1.98260 83154	(-88) 5.04386 062	(88) 1.58299 19	4.15105 02388	1.00130 292	0.00783 284
65	(89) 1.26886 93219	(-90) 7.88103 221	(90) 1.02102 98	4.16667 52388	1.00128 286	0.00771 203
66	(90) 8.24765 05921	(-91) 1.21246 649	(91) 6.68774 50	4.18205 98542	1.00126 341	0.00759 489
67	(92) 5.44344 93908	(-93) 1.83707 044	(93) 4.44735 04	4.19721 13693	1.00124 455	0.00748 125
68	(94) 3.64711 10918	(-95) 2.74189 619	(95) 3.00196 15	4.21213 67425	1.00122 623	0.00737 096
69	(96) 2.48003 55424	(-97) 4.03220 028	(97) 2.05634 36	4.22684 26248	1.00120 845	0.00726 388
70	(98) 1.71122 45243	(-99) 5.84376 852	(99) 1.42915 88	4.24133 53785	1.00119 118	0.00715 986
71	(100) 1.19785 71670	(-101) 8.34824 074	(101) 1.00755 70	4.25562 10927	1.00117 439	0.00705 878
72	(101) 8.50478 58857	(-102) 1.17580 856	(102) 7.20403 24	4.26970 55998	1.00115 807	0.00696 052
73	(103) 6.12344 58377	(-104) 1.63306 744	(104) 5.22292 35	4.28359 44887	1.00114 220	0.00686 495
74	(105) 4.47011 54615	(-106) 2.23707 868	(106) 3.83884 87	4.29729 31188	1.00112 675	0.00677 197
75	(107) 3.30788 54415	(-108) 3.02307 930	(108) 2.85994 23	4.31080 66323	1.00111 172	0.00668 148
76	(109) 2.48091 40811	(-110) 4.03077 240	(110) 2.15925 64	4.32413 99657	1.00109 709	0.00659 337
77	(111) 1.88549 47017	(-112) 5.30364 789	(112) 1.65183 12	4.33729 78604	1.00108 283	0.00650 756
78	(113) 1.45183 09203	(-114) 6.88785 441	(114) 1.28016 92	4.35028 48734	1.00106 894	0.00642 395
79	(115) 1.13242 81178	(-116) 8.83058 257	(116) 1.00493 28	4.36310 53862	1.00105 540	0.00634 247
80	(116) 8.94618 21308	(-117) 1.11779 526	(117) 7.98921 57	4.37576 36140	1.00104 220	0.00626 302
81	(118) 7.15694 57046	(-119) 1.39724 408	(119) 6.43131 87	4.38826 36140	1.00102 933	0.00618 554
82	(120) 5.79712 60207	(-121) 1.72499 269	(121) 5.24152 47	4.40060 92931	1.00101 677	0.00610 995
83	(122) 4.75364 33370	(-123) 2.10364 962	(123) 4.32425 79	4.41280 44150	1.00100 452	0.00603 619
84	(124) 3.94552 39697	(-125) 2.53451 761	(125) 3.61075 53	4.42485 26078	1.00099 255	0.00596 419
85	(126) 3.31424 01346	(-127) 3.01728 287	(127) 3.05108 83	4.43675 73697	1.00098 087	0.00589 389
86	(128) 2.81710 41144	(-129) 3.54974 456	(129) 2.60868 05	4.44852 20756	1.00096 946	0.00582 522
87	(130) 2.42270 95384	(-131) 4.12760 995	(131) 2.25650 86	4.46014 99825	1.00095 831	0.00575 814
88	(132) 2.10775 72984	(-133) 4.74437 926	(133) 1.97444 50	4.47164 42354	1.00094 741	0.00569 258
89	(134) 1.85482 64226	(-135) 5.39134 006	(135) 1.74738 38	4.48300 78718	1.00093 676	0.00562 850
90	(136) 1.65079 55161	(-137) 6.05768 546	(137) 1.56390 85	4.49424 38268	1.00092 635	0.00556 584
91	(138) 1.48571 59645	(-139) 6.73076 163	(139) 1.41533 72	4.50535 49379	1.00091 617	0.00550 457
92	(140) 1.35200 15277	(-141) 7.39644 134	(141) 1.29503 36	4.51634 39489	1.00090 620	0.00544 463
93	(142) 1.24384 14055	(-143) 8.03961 016	(143) 1.19790 60	4.52721 35142	1.00089 646	0.00538 598
94	(144) 1.15677 25071	(-145) 8.64474 211	(145) 1.12004 22	4.53796 62023	1.00088 691	0.00532 858
95	(146) 1.08736 61567	(-147) 9.19653 415	(147) 1.05843 98	4.54860 45002	1.00087 757	0.00527 239
96	(148) 1.03299 78488	(-149) 9.68056 227	(149) 1.01081 00	4.55913 08160	1.00086 843	0.00521 738
97	(149) 9.91677 93487	(-150) 1.00839 190	(150) 9.75431 69	4.56954 74827	1.00085 947	0.00516 350
98	(151) 9.61927 59682	(-152) 1.03957 928	(152) 9.51045 90	4.57985 67610	1.00085 070	0.00511 072
99	(153) 9.42689 04489	(-154) 1.06079 519	(154) 9.36780 21	4.59006 08426	1.00084 210	0.00505 901
100	(155) 9.33262 15444	(-156) 1.07151 029	(156) 9.32096 31	4.60016 18527	1.00083 368	0.00500 833
101	(157) 9.33262 15444	(-158) 1.07151 029	(158) 9.36756 79	4.61016 18527	1.00082 542	0.00495 866

$$(n-1)! \quad 1/(n-1)! \quad (n-\frac{1}{2})! \quad * \frac{d}{dn} \ln(n-1)! \quad \left[\begin{matrix} (-7) \\ 3 \end{matrix} \right] \quad \left[\begin{matrix} (-6) \\ 4 \end{matrix} \right]$$

$$n! = (2\pi)^{\frac{1}{2}} n^{n+\frac{1}{2}} e^{-n} f_1(n) \quad \Gamma(n) = (2\pi)^{\frac{1}{2}} n^{n-\frac{1}{2}} e^{-n} f_1(n) \quad \psi(n) = \ln n - f_3(n) \quad (2\pi)^{\frac{1}{2}} = 2.50662 82746 31001$$

*See page II.