

Table 6.5 AUXILIARY FUNCTIONS FOR GAMMA AND DIGAMMA FUNCTIONS

x^{-1}	$f_1(x)$	$f_2(x)$	$f_3(x)$	$\langle x \rangle$
0.015	1.00125 077	0.92018 852	0.00751 875	67
0.014	1.00116 735	0.92010 519	0.00701 633	71
0.013	1.00108 391	0.92002 186	0.00651 408	77
0.012	1.00100 050	0.91993 853	0.00601 200	83
0.011	1.00091 708	0.91985 520	0.00551 008	91
0.010	1.00083 368	0.91977 186	0.00500 833	100
0.009	1.00075 028	0.91968 853	0.00450 675	111
0.008	1.00066 689	0.91960 520	0.00400 533	125
0.007	1.00058 350	0.91952 187	0.00350 408	143
0.006	1.00050 012	0.91943 853	0.00300 300	167
0.005	1.00041 675	0.91935 520	0.00250 208	200
0.004	1.00033 339	0.91927 187	0.00200 133	250
0.003	1.00025 003	0.91918 853	0.00150 075	333
0.002	1.00016 668	0.91910 520	0.00100 033	500
0.001	1.00008 334	0.91902 187	0.00050 008	1000
0.000	1.00000 000 $\left[\begin{smallmatrix} (-8)1 \\ 2 \end{smallmatrix} \right]$	0.91893 853 $\left[\begin{smallmatrix} (-8)1 \\ 2 \end{smallmatrix} \right]$	0.00000 000 $\left[\begin{smallmatrix} (-8)2 \\ 3 \end{smallmatrix} \right]$	∞

$$x! = (2\pi)^{\frac{1}{2}} x^{x-\frac{1}{2}} e^{-x} f_1(x)$$

$$\Gamma(x) = (2\pi)^{\frac{1}{2}} x^{x-\frac{1}{2}} e^{-x} f_1(x)$$

$$\ln \Gamma(x) = \ln (x-1)! = (x-\frac{1}{2}) \ln x - x + f_2(x)$$

$$\psi(x) = \ln x - f_3(x)$$

$$(2\pi)^{\frac{1}{2}} = 2.50662\ 82746\ 31001$$

$$\langle x \rangle = \text{nearest integer to } x.$$

Table 6.6**FACTORIALS FOR LARGE ARGUMENTS**

n	$n!$	n	$n!$
100	(157) 9.3326 21544 39441 52682	600	(1408) 1.2655 72316 22543 07425
200	(374) 7.8865 78673 64790 50355	700	(1689) 2.4220 40124 75027 21799
300	(614) 3.0605 75122 16440 63604	800	(1976) 7.7105 30113 35386 00414
400	(868) 6.4034 52284 66238 95262	900	(2269) 6.7526 80220 96458 41584
500	(1134) 1.2201 36825 99111 00687	1000	(2567) 4.0238 72600 77093 77354
	$\Gamma(n+1)$		$\Gamma(n+1)$

Compiled from Ballistic Research Laboratory, A table of the factorial numbers and their reciprocals from 1! to 1000! to 20 significant digits, Technical Note No. 381, Aberdeen Proving Ground, Md.(1951) (with permission).