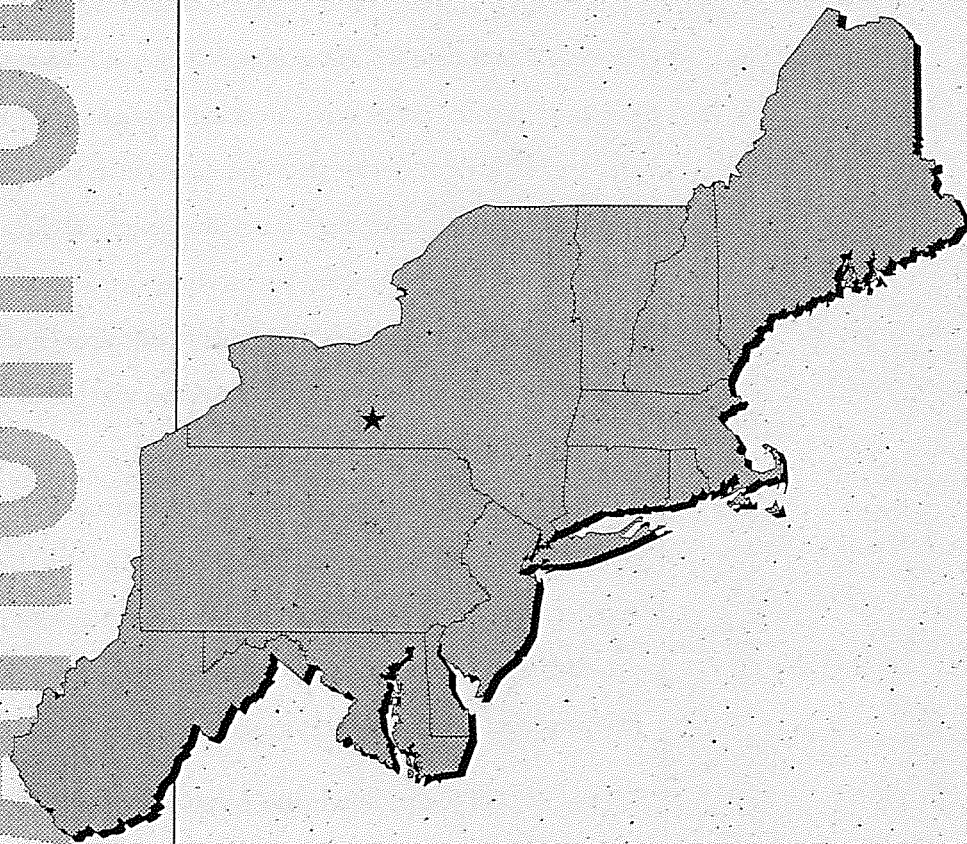


NORTHEAST REGIONAL CLIMATE CENTER

Gamma Distribution Probability Tables for Use in Climatology

Daniel S. Wilks



**Cornell University
Ithaca, New York**

Publication No. RR 91-2
December 1991

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Northeast Regional Climate Center

1113A Bradfield Hall
Cornell University
Ithaca, New York 14853
(607) 255-1751



The Northeast Regional Climate Center is supported by a Grant from the National Oceanic and Atmospheric Administration.

Gamma Distribution Probability Tables for Use in Climatology

Daniel S. Wilks
Department of Soil, Crop and
Atmospheric Sciences
Cornell University

**Northeast Regional Climate Center
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INTRODUCTION

The gamma distribution is widely used in climatological applications for representing variations in precipitation, ranging from seasonal and monthly totals (e.g., Ropelewski et al. 1985, Waggoner 1989) to nonzero daily values (e.g., Stern and Coe 1984, Wilks 1989). In addition, it can be used to interpret the 30- and 90-day precipitation forecasts issued by the Climate Analysis Center (Wilks and Eggleston 1992).

The probability density function for this distribution can be written as

$$f(x; \alpha, \beta) = \frac{(x/\beta)^{\alpha-1} \exp(-x/\beta)}{\beta \Gamma(\alpha)} ; \quad x \geq 0; \alpha, \beta > 0 .$$

Here x is the random variable (e.g., the precipitation amount), α and β are the two distribution parameters, and $\Gamma(\bullet)$ denotes the gamma function. The gamma distribution is characterized by mean $\mu = \alpha\beta$ and variance $\sigma^2 = \alpha\beta^2$.

The shape parameter α controls the basic form of the distribution. For values of $\alpha \leq 1$, the distribution exhibits a mode at $x = 0$, and is strongly skewed to the right. As α increases above this value, the mode increases and the skewness decreases. For very large values of α (greater than about 50), the gamma distribution approaches the Gaussian (normal) distribution, with $\alpha = \mu^2/\sigma^2$ and $\beta = \sigma^2/\mu$.

The scale parameter β serves, as its name implies, only to scale the distribution. This can be appreciated by noting that everywhere the random variable x appears in the probability density it is divided by β . Since the scale parameter carries the dimensional information, it is sometimes useful to work with the "standard" gamma distribution, i.e., with $\beta \equiv 1$.

Gamma distribution probabilities are calculated by integrating the probability density function. In particular, cumulative probability, i.e., the probability that the random variable x will be no larger than a specific value, r , is given by

$$\Pr(x \leq r) = \int_0^r f(x; \alpha, \beta) dx .$$

This integration cannot be performed analytically, and numerical methods are required to evaluate the integral. Extensive results of such integrations are tabulated in this publication. The probability that the random variable x will fall within any interval can be obtained by finding the difference between the cumulative probabilities:

$$\Pr(a < x \leq b) = \Pr(x \leq b) - \Pr(x \leq a) .$$

PARAMETER FITTING

Gamma distribution parameters characterizing some precipitation climatologies are available in the literature. For example, maps of the shape parameter for monthly total precipitation over the conterminous United States are given by Wilks and Eggleston (1992), and Ropelewski and Jalickee (1983) provide this information for seasonal (3-month) totals. For these cases, the scale parameter can be obtained using the (generally readily available) mean precipitation amount, μ ; together with the relationship $\beta = \mu/\alpha$.

If the distribution parameters are to be fit to a sample of data, the preferred method is maximum likelihood (Choi and Wette 1969). This requires an iterative calculation that is not practical without a computer. Direct application of maximum likelihood techniques requires summing the logarithms of the data, so that special methods are necessary for records containing some zero precipitation amounts (Wilks 1990).

Two simple approximations to the maximum likelihood estimators are available, and may be of value to some users. The first, due to Thom (1958), uses

$$\hat{\alpha} = \frac{1 + \sqrt{1 + \frac{4A}{3}}}{4A}$$

where

$$A = \ln(\bar{X}) - \frac{1}{N} \sum_{i=1}^N \ln(X_i)$$

is the difference between the logarithm of the mean and the mean of the logarithms. The second approximation, given by Greenwood and Durand (1960), uses the polynomial and rational approximations

$$\hat{\alpha} = \frac{1}{A} [.5000876 + .1648852 A - .0544274 A^2], \quad 0 \leq A \leq 0.5772,$$

or

$$\hat{\alpha} = \frac{8.898919 + 9.059950 A + .9775373 A^2}{A (17.79728 + 11.968477 A + A^2)}, \quad 0.5772 \leq A \leq 17.0,$$

where A is as given above. The accuracy of the Greenwood and Durand estimators will be greater than that of the Thom estimator, particularly for small values of the shape parameter. In either case, the scale parameter is subsequently calculated as

$$\hat{\beta} = \bar{X} / \hat{\alpha}.$$

Parameters can also be fit using the method of moments, although this is not recommended (Wilks 1990).

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HOW TO USE THE TABLES

The following probability tables present percentage points of the standard gamma distribution, i.e., that having unit scale parameter β . Data values listed in the body of the table correspond to cumulative probabilities given in the first column. That is, for the standard gamma distribution having the shape parameter listed at the top of a given column, the probability of a random variable being less than or equal to a tabulated value is given in the corresponding row of the first column.

To extract cumulative probabilities corresponding to a data value x of interest in the general case of a distribution with $\beta \neq 1$, construct the standardized variable $\xi = x/\beta$, enter the tables at the appropriate column, locate the value of ξ , and interpolate between the rows of the first column to obtain the cumulative probability.

To use the tables in reverse, i.e., to find percentage points (data values, x) corresponding to a particular cumulative probability in the first column, enter the table at the appropriate row, extract the tabulated value of ξ in the column for the shape parameter of interest, and then reconstitute the dimensional value $x = \beta\xi$.

For example, the distribution of total January precipitation at Ithaca, New York, is characterized by shape parameter $\alpha = 4.4$ and scale parameter $\beta = 1.16$ cm (Wilks and Eggleston 1992). To find the cumulative probability associated with the precipitation amount $x = 10.0$ cm (i.e., the probability of no more than 10 cm of precipitation in an arbitrary January), first calculate the standardized variable $\xi = x/\beta = (10.0 \text{ cm}) / (1.16 \text{ cm}) = 8.621$. Enter the table on page 13 under the column headed by Shape Parameter = 4.40. It can be seen that the cumulative probability associated with $\xi = 8.661$ is nearly 0.96 or, with interpolation, 0.959. Therefore, the gamma distribution probability model indicates a 4.1% chance of total January precipitation being greater than 10 cm at this location.

To find the median January precipitation for Ithaca, locate in the same column the value of the standardized variable associated with the cumulative probability 0.50: $\xi = 4.072$. The dimensional median precipitation value is thus $x = \beta\xi = (1.16 \text{ cm}) (4.072) = 4.72$ cm.

The tables contain values for distributions having shape parameters in the range 0.05 to 50.0. These will be adequate for most cases of climatological interest. For larger values of the shape parameter, the gamma distribution is well approximated by the normal distribution, so that readily available tables of that distribution can be used to evaluate probabilities of interest. In that case,

$$\Pr(x \leq r) \approx \Phi \left[\frac{r - \alpha\beta}{\beta\sqrt{\alpha}} \right], \quad \alpha \geq 50,$$

where $\Phi(\bullet)$ is the cumulative distribution function for the standard normal distribution.

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter									
	0.05	0.10	0.15	0.20	0.25	0.30	0.35	0.40	0.45	0.50
.001	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000
.005	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00002
.010	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00008
.020	0.00000	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00004	0.00013	0.00031
.030	0.00000	0.00000	0.00000	0.00000	0.00000	0.00001	0.00003	0.00012	0.00032	0.00071
.040	0.00000	0.00000	0.00000	0.00000	0.00000	0.00002	0.00007	0.00024	0.00060	0.00126
.050	0.00000	0.00000	0.00000	0.00000	0.00000	0.00003	0.00014	0.00041	0.00098	0.00197
.060	0.00000	0.00000	0.00000	0.00000	0.00001	0.00006	0.00023	0.00065	0.00147	0.00283
.080	0.00000	0.00000	0.00000	0.00000	0.00003	0.00015	0.00053	0.00134	0.00279	0.00504
.100	0.00000	0.00000	0.00000	0.00001	0.00007	0.00032	0.00100	0.00235	0.00459	0.00790
.120	0.00000	0.00000	0.00000	0.00002	0.00014	0.00059	0.00169	0.00371	0.00690	0.01140
.140	0.00000	0.00000	0.00000	0.00004	0.00026	0.00099	0.00262	0.00546	0.00973	0.01555
.160	0.00000	0.00000	0.00000	0.00007	0.00044	0.00155	0.00384	0.00763	0.01313	0.02038
.180	0.00000	0.00000	0.00001	0.00012	0.00071	0.00230	0.00538	0.01027	0.01710	0.02589
.200	0.00000	0.00000	0.00001	0.00021	0.00108	0.00327	0.00728	0.01339	0.02168	0.03209
.220	0.00000	0.00000	0.00003	0.00034	0.00158	0.00450	0.00958	0.01704	0.02689	0.03901
.240	0.00000	0.00000	0.00005	0.00052	0.00224	0.00602	0.01231	0.02124	0.03275	0.04666
.260	0.00000	0.00000	0.00008	0.00078	0.00309	0.00787	0.01551	0.02604	0.03931	0.05506
.280	0.00000	0.00000	0.00013	0.00112	0.00416	0.01009	0.01921	0.03146	0.04657	0.06425
.300	0.00000	0.00000	0.00021	0.00159	0.00549	0.01273	0.02347	0.03754	0.05459	0.07424
.320	0.00000	0.00001	0.00032	0.00219	0.00712	0.01582	0.02833	0.04433	0.06338	0.08506
.340	0.00000	0.00001	0.00047	0.00297	0.00909	0.01941	0.03382	0.05186	0.07300	0.09676
.360	0.00000	0.00002	0.00069	0.00396	0.01144	0.02356	0.04000	0.06017	0.08347	0.10937
.380	0.00000	0.00004	0.00100	0.00519	0.01423	0.02832	0.04692	0.06932	0.09485	0.12293
.400	0.00000	0.00006	0.00140	0.00672	0.01752	0.03374	0.05463	0.07936	0.10718	0.13750
.420	0.00000	0.00010	0.00194	0.00859	0.02136	0.03988	0.06320	0.09035	0.12053	0.15312
.440	0.00000	0.00017	0.00265	0.01086	0.02582	0.04682	0.07268	0.10234	0.13494	0.16985
.460	0.00000	0.00026	0.00357	0.01359	0.03098	0.05462	0.08315	0.11540	0.15049	0.18777
.480	0.00000	0.00039	0.00474	0.01686	0.03690	0.06336	0.09468	0.12962	0.16726	0.20695
.500	0.00000	0.00059	0.00623	0.02075	0.04367	0.07313	0.10737	0.14508	0.18533	0.22747
.520	0.00000	0.00088	0.00811	0.02534	0.05140	0.08403	0.12130	0.16187	0.20479	0.24943
.540	0.00000	0.00128	0.01045	0.03074	0.06019	0.09616	0.13659	0.18010	0.22576	0.27295
.560	0.00001	0.00185	0.01335	0.03706	0.07016	0.10965	0.15336	0.19989	0.24835	0.29814
.580	0.00001	0.00262	0.01693	0.04443	0.08145	0.12463	0.17174	0.22139	0.27272	0.32516
.600	0.00002	0.00368	0.02130	0.05301	0.09421	0.14125	0.19189	0.24475	0.29902	0.35416
.620	0.00004	0.00512	0.02662	0.06296	0.10861	0.15971	0.21400	0.27016	0.32744	0.38535
.640	0.00008	0.00705	0.03308	0.07449	0.12486	0.18020	0.23827	0.29784	0.35820	0.41895
.660	0.00014	0.00961	0.04089	0.08782	0.14321	0.20297	0.26496	0.32804	0.39157	0.45522
.680	0.00026	0.01299	0.05030	0.10323	0.16393	0.22831	0.29437	0.36106	0.42785	0.49447
.700	0.00047	0.01743	0.06161	0.12104	0.18735	0.25656	0.32683	0.39726	0.46741	0.53710
.720	0.00082	0.02322	0.07520	0.14164	0.21388	0.28814	0.36279	0.43708	0.51071	0.58355
.740	0.00142	0.03075	0.09151	0.16552	0.24402	0.32356	0.40275	0.48106	0.55827	0.63438
.760	0.00242	0.04049	0.11112	0.19325	0.27838	0.36345	0.44739	0.52986	0.61081	0.69030
.780	0.00408	0.05310	0.13474	0.22561	0.31773	0.40861	0.49751	0.58433	0.66917	0.75219
.800	0.00678	0.06939	0.16329	0.26354	0.36309	0.46007	0.55419	0.64557	0.73448	0.82119
.820	0.01116	0.09049	0.19798	0.30834	0.41577	0.51922	0.61883	0.71502	0.80822	0.89881
.840	0.01819	0.11792	0.24049	0.36174	0.47759	0.58792	0.69337	0.79465	0.89239	0.98711
.860	0.02943	0.15388	0.29316	0.42620	0.55110	0.66879	0.78049	0.88723	0.98984	1.08898
.880	0.04740	0.20159	0.35945	0.50536	0.64007	0.76574	0.88419	0.99684	1.10473	1.20866
.900	0.07632	0.26615	0.44480	0.60490	0.75039	0.88481	1.01070	1.12984	1.24355	1.35277
.920	0.12366	0.35624	0.55843	0.73446	0.89203	1.03627	1.17051	1.29698	1.41725	1.53245
.940	0.20413	0.48840	0.71791	0.91232	1.08387	1.23951	1.38348	1.51851	1.64647	1.76869
.950	0.26593	0.58044	0.82559	1.03053	1.21012	1.37235	1.52196	1.66196	1.79440	1.92073
.960	0.35213	0.70077	0.96346	1.18025	1.36893	1.53864	1.69466	1.84034	1.97791	2.10894
.970	0.47878	0.86693	1.14990	1.38049	1.57981	1.75831	1.92193	2.07434	2.21801	2.35465
.980	0.68301	1.11903	1.42680	1.67444	1.88702	2.07657	2.24976	2.41072	2.56215	2.70595
.990	1.08763	1.58848	1.93059	2.20231	2.43389	2.63941	2.82659	3.00010	3.16301	3.31745
.995	1.54463	2.09456	2.46364	2.75470	3.00181	3.22057	3.41944	3.60355	3.77620	3.93972
.999	2.73649	3.36367	3.77761	4.10198	4.37643	4.61895	4.83909	5.04260	5.23332	5.41382

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	0.50	0.55	0.60	0.65	0.70	0.75	0.80	0.85	0.90	0.95	1.00
.001	0.0000	0.0000	0.0000	0.0000	0.0000	0.0001	0.0002	0.0003	0.0004	0.0007	0.0010
.005	0.0000	0.0001	0.0001	0.0002	0.0005	0.0008	0.0012	0.0018	0.0027	0.0037	0.0050
.010	0.0001	0.0002	0.0004	0.0007	0.0012	0.0019	0.0029	0.0042	0.0058	0.0077	0.0101
.020	0.0003	0.0007	0.0012	0.0021	0.0033	0.0049	0.0069	0.0094	0.0125	0.0161	0.0202
.030	0.0007	0.0014	0.0024	0.0039	0.0058	0.0084	0.0115	0.0153	0.0197	0.0247	0.0305
.040	0.0013	0.0023	0.0039	0.0060	0.0088	0.0123	0.0165	0.0215	0.0272	0.0336	0.0408
.050	0.0020	0.0035	0.0056	0.0085	0.0122	0.0166	0.0219	0.0280	0.0350	0.0427	0.0513
.060	0.0028	0.0049	0.0077	0.0113	0.0158	0.0212	0.0276	0.0348	0.0430	0.0520	0.0619
.080	0.0050	0.0082	0.0124	0.0177	0.0240	0.0314	0.0398	0.0493	0.0597	0.0711	0.0834
.100	0.0079	0.0124	0.0181	0.0250	0.0331	0.0425	0.0530	0.0646	0.0772	0.0908	0.1054
.120	0.0114	0.0173	0.0246	0.0332	0.0433	0.0546	0.0671	0.0807	0.0954	0.1112	0.1278
.140	0.0156	0.0230	0.0319	0.0424	0.0543	0.0675	0.0820	0.0976	0.1144	0.1321	0.1508
.160	0.0204	0.0294	0.0401	0.0524	0.0661	0.0813	0.0977	0.1153	0.1340	0.1537	0.1744
.180	0.0259	0.0366	0.0490	0.0632	0.0788	0.0959	0.1142	0.1337	0.1543	0.1759	0.1985
.200	0.0321	0.0445	0.0588	0.0748	0.0923	0.1113	0.1315	0.1529	0.1754	0.1988	0.2231
.220	0.0390	0.0532	0.0694	0.0873	0.1067	0.1275	0.1496	0.1729	0.1972	0.2224	0.2485
.240	0.0467	0.0627	0.0808	0.1005	0.1219	0.1446	0.1685	0.1936	0.2197	0.2466	0.2744
.260	0.0551	0.0730	0.0930	0.1147	0.1379	0.1625	0.1882	0.2151	0.2429	0.2716	0.3011
.280	0.0642	0.0842	0.1061	0.1297	0.1548	0.1812	0.2088	0.2374	0.2670	0.2974	0.3285
.300	0.0742	0.0961	0.1200	0.1455	0.1725	0.2008	0.2302	0.2606	0.2919	0.3239	0.3567
.320	0.0851	0.1090	0.1348	0.1623	0.1912	0.2213	0.2525	0.2846	0.3176	0.3513	0.3857
.340	0.0968	0.1227	0.1506	0.1800	0.2108	0.2428	0.2757	0.3096	0.3442	0.3796	0.4155
.360	0.1094	0.1374	0.1673	0.1987	0.2314	0.2652	0.2999	0.3355	0.3718	0.4088	0.4463
.380	0.1229	0.1531	0.1850	0.2184	0.2530	0.2886	0.3251	0.3624	0.4004	0.4390	0.4780
.400	0.1375	0.1698	0.2038	0.2392	0.2757	0.3131	0.3514	0.3904	0.4300	0.4702	0.5108
.420	0.1531	0.1876	0.2237	0.2611	0.2995	0.3388	0.3789	0.4196	0.4608	0.5026	0.5447
.440	0.1699	0.2066	0.2448	0.2841	0.3245	0.3656	0.4075	0.4499	0.4928	0.5361	0.5798
.460	0.1878	0.2267	0.2671	0.3085	0.3508	0.3938	0.4374	0.4815	0.5260	0.5710	0.6162
.480	0.2069	0.2482	0.2907	0.3341	0.3784	0.4232	0.4686	0.5145	0.5607	0.6072	0.6539
.500	0.2275	0.2710	0.3149	0.3612	0.4074	0.4542	0.5014	0.5489	0.5967	0.6448	0.6931
.520	0.2494	0.2953	0.3422	0.3898	0.4380	0.4867	0.5356	0.5849	0.6344	0.6841	0.7340
.540	0.2729	0.3212	0.3704	0.4201	0.4703	0.5208	0.5716	0.6226	0.6738	0.7251	0.7765
.560	0.2981	0.3489	0.4003	0.4521	0.5043	0.5568	0.6094	0.6622	0.7151	0.7680	0.8209
.580	0.3252	0.3783	0.4320	0.4861	0.5403	0.5948	0.6493	0.7038	0.7584	0.8130	0.8675
.600	0.3542	0.4099	0.4659	0.5222	0.5781	0.6349	0.6913	0.7476	0.8039	0.8601	0.9163
.620	0.3854	0.4436	0.5020	0.5605	0.6190	0.6774	0.7357	0.7939	0.8519	0.9098	0.9676
.640	0.4189	0.4798	0.5407	0.6015	0.6621	0.7225	0.7828	0.8428	0.9026	0.9622	1.0217
.660	0.4552	0.5188	0.5821	0.6452	0.7081	0.7706	0.8328	0.8947	0.9564	1.0177	1.0788
.680	0.4945	0.5608	0.6267	0.6922	0.7572	0.8219	0.8861	0.9500	1.0135	1.0766	1.1394
.700	0.5371	0.6062	0.6747	0.7427	0.8101	0.8769	0.9432	1.0091	1.0744	1.1394	1.2040
.720	0.5835	0.6556	0.7268	0.7973	0.8670	0.9361	1.0045	1.0724	1.1398	1.2066	1.2730
.740	0.6344	0.7094	0.7834	0.8565	0.9287	1.0001	1.0707	1.1407	1.2101	1.2788	1.3471
.760	0.6903	0.7684	0.8453	0.9211	0.9958	1.0696	1.1426	1.2147	1.2862	1.3569	1.4271
.780	0.7522	0.8325	0.9135	0.9920	1.0694	1.1457	1.2210	1.2954	1.3691	1.4419	1.5141
.800	0.8212	0.9060	0.9890	1.0705	1.1506	1.2296	1.3074	1.3842	1.4601	1.5351	1.6094
.820	0.8988	0.9871	1.0735	1.1581	1.2412	1.3228	1.4033	1.4826	1.5609	1.6383	1.7148
.840	0.9871	1.0792	1.1691	1.2570	1.3432	1.4278	1.5110	1.5930	1.6738	1.7537	1.8326
.860	1.0890	1.1852	1.2788	1.3702	1.4597	1.5475	1.6337	1.7186	1.8022	1.8841	1.9661
.880	1.2087	1.3093	1.4070	1.5023	1.5954	1.6866	1.7761	1.8640	1.9507	2.0360	2.1203
.900	1.3528	1.4582	1.5605	1.6600	1.7571	1.8521	1.9453	2.0367	2.1267	2.2152	2.3026
.920	1.5325	1.6434	1.7508	1.8552	1.9568	2.0562	2.1534	2.2488	2.3426	2.4348	2.5257
.940	1.7687	1.8862	1.9996	2.1097	2.2167	2.3212	2.4233	2.5234	2.6217	2.7183	2.8134
.950	1.9207	2.0420	2.1590	2.2724	2.3826	2.4901	2.5951	2.6980	2.7990	2.8981	2.9957
.960	2.1089	2.2346	2.3557	2.4729	2.5868	2.6977	2.8061	2.9122	3.0162	3.1184	3.2189
.970	2.3546	2.4855	2.6115	2.7333	2.8516	2.9667	3.0791	3.1891	3.2968	3.4026	3.5066
.980	2.7059	2.8435	2.9757	3.1035	3.2275	3.3480	3.4656	3.5805	3.6931	3.8035	3.9120
.990	3.3175	3.4649	3.6066	3.7433	3.8757	4.0044	4.1299	4.2524	4.3723	4.4898	4.6052
.995	3.9397	4.0957	4.2455	4.3899	4.5297	4.6655	4.7978	4.9269	5.0532	5.1769	5.2983
.999	5.4138	5.5859	5.7508	5.9099	6.0637	6.2130	6.3584	6.5002	6.6378	6.7747	6.9077

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	1.00	1.05	1.10	1.15	1.20	1.25	1.30	1.35	1.40	1.45	1.50
.001	0.0010	0.0014	0.0020	0.0026	0.0034	0.0044	0.0056	0.0069	0.0084	0.0102	0.0121
.005	0.0050	0.0066	0.0085	0.0107	0.0132	0.0161	0.0193	0.0229	0.0268	0.0312	0.0359
.010	0.0101	0.0128	0.0160	0.0196	0.0236	0.0281	0.0331	0.0385	0.0443	0.0506	0.0574
.020	0.0202	0.0249	0.0302	0.0360	0.0424	0.0494	0.0569	0.0650	0.0736	0.0828	0.0924
.030	0.0305	0.0369	0.0439	0.0516	0.0600	0.0689	0.0785	0.0887	0.0994	0.1107	0.1225
.040	0.0408	0.0488	0.0574	0.0667	0.0768	0.0875	0.0988	0.1107	0.1233	0.1364	0.1501
.050	0.0513	0.0606	0.0708	0.0816	0.0931	0.1054	0.1183	0.1318	0.1459	0.1606	0.1759
.060	0.0619	0.0726	0.0840	0.0963	0.1092	0.1229	0.1372	0.1521	0.1677	0.1839	0.2006
.080	0.0834	0.0965	0.1105	0.1253	0.1408	0.1570	0.1739	0.1914	0.2095	0.2282	0.2475
.100	0.1054	0.1208	0.1371	0.1541	0.1719	0.1904	0.2096	0.2293	0.2497	0.2707	0.2922
.120	0.1278	0.1454	0.1638	0.1830	0.2029	0.2235	0.2447	0.2666	0.2890	0.3120	0.3355
.140	0.1508	0.1704	0.1908	0.2120	0.2338	0.2564	0.2796	0.3034	0.3277	0.3526	0.3779
.160	0.1744	0.1959	0.2182	0.2412	0.2650	0.2893	0.3144	0.3399	0.3660	0.3927	0.4197
.180	0.1985	0.2218	0.2459	0.2708	0.2963	0.3225	0.3492	0.3765	0.4042	0.4325	0.4612
.200	0.2231	0.2483	0.2742	0.3007	0.3280	0.3558	0.3842	0.4131	0.4425	0.4723	0.5026
.220	0.2485	0.2753	0.3029	0.3312	0.3600	0.3895	0.4194	0.4499	0.4808	0.5122	0.5439
.240	0.2744	0.3030	0.3322	0.3621	0.3926	0.4236	0.4551	0.4870	0.5194	0.5522	0.5854
.260	0.3011	0.3313	0.3622	0.3936	0.4256	0.4581	0.4911	0.5246	0.5584	0.5926	0.6272
.280	0.3285	0.3603	0.3928	0.4258	0.4593	0.4933	0.5277	0.5626	0.5978	0.6334	0.6693
.300	0.3567	0.3901	0.4241	0.4586	0.4936	0.5290	0.5649	0.6011	0.6377	0.6746	0.7118
.320	0.3857	0.4206	0.4561	0.4921	0.5286	0.5655	0.6027	0.6403	0.6782	0.7164	0.7549
.340	0.4155	0.4520	0.4890	0.5265	0.5644	0.6026	0.6412	0.6802	0.7194	0.7589	0.7987
.360	0.4463	0.4843	0.5228	0.5617	0.6010	0.6407	0.6806	0.7208	0.7614	0.8021	0.8431
.380	0.4780	0.5176	0.5575	0.5979	0.6386	0.6796	0.7209	0.7624	0.8042	0.8462	0.8884
.400	0.5108	0.5519	0.5933	0.6351	0.6771	0.7195	0.7621	0.8049	0.8479	0.8912	0.9346
.420	0.5447	0.5873	0.6301	0.6733	0.7168	0.7604	0.8043	0.8484	0.8927	0.9372	0.9818
.440	0.5798	0.6238	0.6682	0.7127	0.7575	0.8026	0.8478	0.8931	0.9387	0.9843	1.0301
.460	0.6162	0.6617	0.7075	0.7534	0.7996	0.8459	0.8924	0.9391	0.9858	1.0327	1.0797
.480	0.6539	0.7009	0.7481	0.7955	0.8430	0.8907	0.9385	0.9864	1.0344	1.0824	1.1306
.500	0.6931	0.7416	0.7903	0.8390	0.8879	0.9369	0.9860	1.0352	1.0844	1.1337	1.1830
.520	0.7340	0.7839	0.8340	0.8842	0.9345	0.9848	1.0352	1.0856	1.1360	1.1865	1.2370
.540	0.7765	0.8280	0.8796	0.9311	0.9828	1.0344	1.0861	1.1378	1.1895	1.2412	1.2929
.560	0.8209	0.8740	0.9270	0.9800	1.0330	1.0860	1.1390	1.1919	1.2449	1.2978	1.3507
.580	0.8675	0.9220	0.9765	1.0310	1.0853	1.1397	1.1940	1.2482	1.3024	1.3566	1.4107
.600	0.9163	0.9724	1.0283	1.0842	1.1400	1.1958	1.2514	1.3069	1.3624	1.4178	1.4731
.620	0.9676	1.0252	1.0827	1.1401	1.1973	1.2544	1.3114	1.3683	1.4250	1.4816	1.5382
.640	1.0217	1.0809	1.1399	1.1988	1.2574	1.3160	1.3743	1.4325	1.4906	1.5485	1.6063
.660	1.0788	1.1397	1.2003	1.2606	1.3208	1.3807	1.4333	1.5001	1.5594	1.6187	1.6693
.680	1.1394	1.2019	1.2641	1.3261	1.3877	1.4491	1.5103	1.5713	1.6320	1.6926	1.7529
.700	1.2040	1.2682	1.3320	1.3955	1.4587	1.5197	1.5843	1.6467	1.7088	1.7707	1.8324
.720	1.2730	1.3389	1.4044	1.4696	1.5344	1.5989	1.6630	1.7266	1.7904	1.8538	1.9168
.740	1.3471	1.4148	1.4821	1.5489	1.6154	1.6814	1.7471	1.8125	1.8776	1.9423	2.0068
.760	1.4271	1.4967	1.5658	1.6344	1.7025	1.7703	1.8376	1.9045	1.9711	2.0374	2.1033
.780	1.5141	1.5857	1.6567	1.7271	1.7970	1.8664	1.9354	2.0040	2.0722	2.1400	2.2075
.800	1.6094	1.6830	1.7560	1.8283	1.9001	1.9713	2.0421	2.1124	2.1823	2.2517	2.3208
.820	1.7148	1.7905	1.8656	1.9399	2.0137	2.0868	2.1595	2.2316	2.3032	2.3744	2.4437
.840	1.8326	1.9106	1.9879	2.0644	2.1375	2.2154	2.2900	2.3641	2.4376	2.5107	2.5833
.860	1.9661	2.0466	2.1263	2.2051	2.2832	2.3606	2.4373	2.5135	2.5891	2.6641	2.7387
.880	2.1203	2.2035	2.2857	2.3671	2.4477	2.5275	2.6066	2.6850	2.7628	2.8400	2.9167
.900	2.3026	2.3888	2.4740	2.5582	2.6415	2.7239	2.8056	2.8866	2.9669	3.0466	3.1257
.920	2.5257	2.6154	2.7039	2.7913	2.8777	2.9633	3.0480	3.1319	3.2151	3.2975	3.3793
.940	2.8134	2.9071	2.9996	3.0909	3.1811	3.2703	3.3585	3.4459	3.5325	3.6183	3.7034
.950	2.9957	3.0919	3.1867	3.2802	3.3727	3.4640	3.5544	3.6439	3.7325	3.8203	3.9074
.960	3.2189	3.3178	3.4153	3.5115	3.6066	3.7005	3.7933	3.8852	3.9762	4.0663	4.1556
.970	3.5066	3.6089	3.7097	3.8091	3.9073	4.0042	4.1000	4.1948	4.2887	4.3816	4.4736
.980	3.9120	4.0187	4.1238	4.2274	4.3296	4.4306	4.5303	4.6289	4.7265	4.8230	4.9187
.990	4.6052	4.7186	4.8302	4.9402	5.0486	5.1556	5.2613	5.3658	5.4691	5.5712	5.6724
.995	5.2983	5.4176	5.5350	5.6506	5.7645	5.8769	5.9878	6.0975	6.2058	6.3130	6.4191
.999	6.9077	7.0385	7.1670	7.2935	7.4182	7.5411	7.6623	7.7820	7.9004	8.0174	8.1331

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	1.50	1.55	1.60	1.65	1.70	1.75	1.80	1.85	1.90	1.95	2.00
.001	0.0121	0.0143	0.0168	0.0195	0.0224	0.0256	0.0290	0.0327	0.0367	0.0409	0.0454
.005	0.0359	0.0409	0.0464	0.0523	0.0585	0.0651	0.0720	0.0793	0.0870	0.0951	0.1035
.010	0.0574	0.0646	0.0723	0.0804	0.0889	0.0978	0.1072	0.1169	0.1271	0.1376	0.1486
.020	0.0924	0.1026	0.1132	0.1244	0.1360	0.1480	0.1605	0.1734	0.1868	0.2005	0.2147
.030	0.1225	0.1349	0.1478	0.1612	0.1751	0.1894	0.2042	0.2194	0.2350	0.2511	0.2675
.040	0.1501	0.1643	0.1790	0.1943	0.2100	0.2262	0.2428	0.2599	0.2774	0.2953	0.3136
.050	0.1759	0.1917	0.2081	0.2249	0.2422	0.2600	0.2783	0.2969	0.3160	0.3355	0.3554
.060	0.2006	0.2178	0.2356	0.2539	0.2726	0.2919	0.3115	0.3316	0.3521	0.3729	0.3942
.080	0.2475	0.2673	0.2876	0.3083	0.3296	0.3513	0.3734	0.3959	0.4188	0.4421	0.4657
.100	0.2922	0.3142	0.3367	0.3597	0.3831	0.4069	0.4311	0.4558	0.4808	0.5061	0.5318
.120	0.3355	0.3595	0.3840	0.4089	0.4342	0.4600	0.4861	0.5126	0.5395	0.5667	0.5942
.140	0.3779	0.4038	0.4300	0.4567	0.4839	0.5114	0.5392	0.5674	0.5960	0.6249	0.6540
.160	0.4197	0.4473	0.4753	0.5036	0.5324	0.5615	0.5910	0.6208	0.6509	0.6813	0.7120
.180	0.4612	0.4904	0.5199	0.5499	0.5802	0.6108	0.6418	0.6731	0.7047	0.7365	0.7687
.200	0.5026	0.5333	0.5643	0.5957	0.6275	0.6596	0.6920	0.7247	0.7577	0.7909	0.8244
.220	0.5439	0.5761	0.6086	0.6414	0.6746	0.7080	0.7418	0.7758	0.8101	0.8447	0.8794
.240	0.5854	0.6190	0.6529	0.6871	0.7216	0.7563	0.7914	0.8267	0.8623	0.8980	0.9341
.260	0.6272	0.6621	0.6973	0.7328	0.7686	0.8047	0.8410	0.8775	0.9143	0.9513	0.9885
.280	0.6693	0.7055	0.7420	0.7788	0.8158	0.8531	0.8907	0.9284	0.9664	1.0045	1.0428
.300	0.7118	0.7493	0.7871	0.8251	0.8634	0.9019	0.9406	0.9795	1.0186	1.0579	1.0973
.320	0.7549	0.7937	0.8327	0.8719	0.9114	0.9511	0.9909	1.0310	1.0712	1.1116	1.1521
.340	0.7987	0.8387	0.8789	0.9193	0.9599	1.0007	1.0417	1.0829	1.1242	1.1657	1.2073
.360	0.8431	0.8843	0.9257	0.9673	1.0091	1.0510	1.0931	1.1354	1.1778	1.2203	1.2630
.380	0.8884	0.9308	0.9734	1.0161	1.0590	1.1021	1.1453	1.1886	1.2321	1.2756	1.3193
.400	0.9346	0.9782	1.0219	1.0658	1.1098	1.1540	1.1982	1.2426	1.2871	1.3317	1.3695
.420	0.9818	1.0265	1.0714	1.1164	1.1615	1.2068	1.2522	1.2976	1.3431	1.3887	1.4344
.440	1.0301	1.0760	1.1221	1.1682	1.2144	1.2607	1.3072	1.3536	1.4002	1.4468	1.4935
.460	1.0797	1.1267	1.1739	1.2212	1.2685	1.3159	1.3633	1.4109	1.4584	1.5061	1.5537
.480	1.1306	1.1788	1.2271	1.2755	1.3239	1.3723	1.4209	1.4694	1.5180	1.5666	1.6153
.500	1.1830	1.2324	1.2818	1.3313	1.3808	1.4303	1.4799	1.5294	1.5791	1.6287	1.6783
.520	1.2370	1.2876	1.3381	1.3887	1.4388	1.4899	1.5405	1.5911	1.6418	1.6924	1.7430
.540	1.2929	1.3446	1.3962	1.4479	1.4959	1.5513	1.6030	1.6546	1.7063	1.7579	1.8096
.560	1.3507	1.4035	1.4564	1.5092	1.5620	1.6147	1.6675	1.7116	1.7728	1.8255	1.8781
.580	1.4107	1.4647	1.5187	1.5726	1.6265	1.6804	1.7342	1.7879	1.8417	1.8953	1.9489
.600	1.4731	1.5283	1.5835	1.6386	1.6936	1.7485	1.8034	1.8582	1.9130	1.9674	2.0223
.620	1.5382	1.5946	1.6510	1.7072	1.7633	1.8194	1.8754	1.9313	1.9871	2.0428	2.0985
.640	1.6063	1.6639	1.7215	1.7789	1.8362	1.8934	1.9505	2.0075	2.0643	2.1211	2.1779
.660	1.6693	1.7366	1.7954	1.8540	1.9125	1.9708	2.0290	2.0871	2.1451	2.2030	2.2608
.680	1.7529	1.8131	1.8731	1.9329	1.9926	2.0521	2.1115	2.1708	2.2299	2.2889	2.3477
.700	1.8324	1.8939	1.9552	2.0163	2.0765	2.1379	2.1985	2.2589	2.3191	2.3792	2.4392
.720	1.9168	1.9796	2.0422	2.1046	2.1668	2.2287	2.2905	2.3521	2.4136	2.4748	2.5359
.740	2.0068	2.0710	2.1350	2.1987	2.2621	2.3254	2.3884	2.4513	2.5139	2.5764	2.6387
.760	2.1033	2.1690	2.2343	2.2994	2.3642	2.4288	2.4932	2.5573	2.6212	2.6849	2.7485
.780	2.2075	2.2746	2.3415	2.4080	2.4742	2.5402	2.6059	2.6714	2.7358	2.8017	2.8665
.800	2.3208	2.3895	2.4579	2.5133	2.5937	2.6611	2.7283	2.7881	2.8618	2.9282	2.9943
.820	2.4437	2.5156	2.5856	2.6552	2.7245	2.7935	2.8622	2.9306	2.9987	3.0665	3.1341
.840	2.5833	2.6554	2.7135	2.7985	2.8695	2.9401	3.0104	3.0804	3.1501	3.2194	3.2885
.860	2.7387	2.8126	2.8864	2.9596	3.0324	3.1048	3.1768	3.2485	3.3199	3.3909	3.4616
.880	2.9167	2.9929	3.0686	3.1438	3.2186	3.2929	3.3669	3.4405	3.5137	3.5865	3.6591
.900	3.1257	3.2042	3.2822	3.3597	3.4366	3.5132	3.5893	3.6650	3.7403	3.8152	3.8897
.920	3.3793	3.4605	3.5412	3.6212	3.7008	3.7798	3.8584	3.9365	4.0141	4.0914	4.1683
.940	3.7034	3.7879	3.8716	3.9548	4.0374	4.1194	4.2009	4.2819	4.3625	4.4425	4.5222
.950	3.9074	3.9937	4.0793	4.1643	4.2487	4.3326	4.4158	4.4986	4.5808	4.6626	4.7431
.960	4.1556	4.2441	4.3320	4.4191	4.5056	4.5915	4.6768	4.7616	4.8458	4.9295	5.0128
.970	4.4736	4.5649	4.6554	4.7451	4.8342	4.9226	5.0104	5.0976	5.1843	5.2704	5.3560
.980	4.9187	5.0135	5.1074	5.2006	5.2931	5.3848	5.4758	5.5662	5.6560	5.7453	5.8339
.990	5.6724	5.7726	5.8719	5.9704	6.0680	6.1648	6.2609	6.3562	6.4509	6.5449	6.6383
.995	6.4191	6.5241	6.6281	6.7312	6.8334	6.9348	7.0354	7.1351	7.2341	7.3325	7.4301
.999	8.1331	8.2476	8.3609	8.4732	8.5845	8.6949	8.8043	8.9129	9.0204	9.1273	9.2333

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	2.00	2.05	2.10	2.15	2.20	2.25	2.30	2.35	2.40	2.45	2.50
.001	0.045	0.050	0.055	0.061	0.066	0.072	0.078	0.084	0.091	0.098	0.105
.005	0.103	0.112	0.121	0.131	0.141	0.151	0.161	0.172	0.183	0.194	0.206
.010	0.149	0.160	0.172	0.184	0.196	0.209	0.222	0.235	0.249	0.263	0.277
.020	0.215	0.229	0.244	0.259	0.275	0.291	0.307	0.324	0.341	0.358	0.376
.030	0.268	0.284	0.302	0.319	0.337	0.355	0.374	0.393	0.412	0.432	0.452
.040	0.314	0.332	0.351	0.371	0.390	0.411	0.431	0.452	0.473	0.494	0.516
.050	0.355	0.376	0.396	0.417	0.438	0.460	0.482	0.504	0.527	0.550	0.573
.060	0.394	0.416	0.438	0.460	0.483	0.506	0.529	0.553	0.576	0.601	0.625
.080	0.466	0.490	0.514	0.539	0.564	0.589	0.615	0.640	0.666	0.693	0.720
.100	0.532	0.558	0.584	0.611	0.638	0.665	0.693	0.720	0.748	0.777	0.805
.120	0.594	0.622	0.650	0.679	0.707	0.736	0.766	0.795	0.825	0.855	0.885
.140	0.654	0.684	0.713	0.743	0.774	0.804	0.835	0.866	0.897	0.929	0.960
.160	0.712	0.743	0.774	0.806	0.838	0.870	0.902	0.934	0.967	1.000	1.033
.180	0.769	0.801	0.834	0.867	0.900	0.933	0.967	1.000	1.034	1.069	1.103
.200	0.824	0.858	0.892	0.926	0.961	0.995	1.030	1.065	1.100	1.136	1.171
.220	0.879	0.914	0.950	0.985	1.021	1.057	1.093	1.129	1.165	1.202	1.238
.240	0.934	0.970	1.007	1.043	1.080	1.117	1.154	1.192	1.229	1.267	1.304
.260	0.988	1.026	1.063	1.101	1.139	1.177	1.215	1.254	1.292	1.331	1.370
.280	1.043	1.081	1.120	1.159	1.198	1.237	1.276	1.316	1.355	1.395	1.435
.300	1.097	1.137	1.177	1.217	1.257	1.297	1.337	1.378	1.418	1.459	1.500
.320	1.152	1.193	1.234	1.275	1.316	1.357	1.398	1.440	1.481	1.522	1.565
.340	1.207	1.249	1.291	1.333	1.375	1.417	1.460	1.502	1.545	1.587	1.630
.360	1.263	1.306	1.349	1.392	1.435	1.478	1.521	1.565	1.608	1.652	1.695
.380	1.319	1.363	1.407	1.451	1.495	1.539	1.583	1.628	1.672	1.717	1.761
.400	1.370	1.421	1.466	1.511	1.556	1.601	1.646	1.692	1.737	1.782	1.828
.420	1.434	1.480	1.525	1.572	1.618	1.664	1.710	1.756	1.803	1.849	1.895
.440	1.494	1.540	1.587	1.634	1.681	1.728	1.775	1.822	1.869	1.916	1.963
.460	1.554	1.601	1.649	1.697	1.745	1.793	1.841	1.889	1.937	1.985	2.033
.480	1.615	1.664	1.713	1.762	1.810	1.859	1.908	1.957	2.006	2.055	2.104
.500	1.678	1.728	1.778	1.827	1.877	1.927	1.977	2.026	2.076	2.126	2.176
.520	1.743	1.794	1.844	1.895	1.946	1.996	2.047	2.098	2.148	2.199	2.250
.540	1.810	1.861	1.913	1.964	2.016	2.068	2.119	2.171	2.222	2.262	2.325
.560	1.878	1.931	1.983	2.036	2.088	2.141	2.193	2.246	2.298	2.351	2.403
.580	1.949	2.003	2.056	2.110	2.163	2.217	2.270	2.323	2.377	2.430	2.483
.600	2.022	2.077	2.131	2.186	2.240	2.295	2.349	2.403	2.458	2.512	2.566
.620	2.099	2.154	2.210	2.265	2.320	2.376	2.431	2.486	2.541	2.597	2.652
.640	2.178	2.234	2.291	2.347	2.404	2.460	2.516	2.573	2.629	2.685	2.741
.660	2.261	2.318	2.376	2.433	2.491	2.548	2.605	2.663	2.720	2.777	2.833
.680	2.348	2.406	2.465	2.524	2.582	2.627	2.699	2.743	2.815	2.873	2.923
.700	2.439	2.499	2.559	2.618	2.678	2.737	2.796	2.855	2.914	2.973	3.032
.720	2.536	2.597	2.658	2.718	2.779	2.839	2.900	2.960	3.020	3.080	3.140
.740	2.639	2.701	2.763	2.825	2.886	2.948	3.009	3.070	3.131	3.192	3.253
.760	2.748	2.812	2.875	2.938	3.001	3.063	3.126	3.188	3.250	3.312	3.374
.780	2.866	2.931	2.995	3.060	3.124	3.188	3.251	3.315	3.378	3.441	3.504
.800	2.994	3.060	3.126	3.191	3.257	3.322	3.387	3.451	3.516	3.580	3.645
.820	3.134	3.201	3.268	3.335	3.402	3.468	3.535	3.601	3.666	3.727	3.798
.840	3.289	3.357	3.426	3.494	3.562	3.630	3.698	3.765	3.832	3.899	3.966
.860	3.462	3.532	3.602	3.672	3.742	3.811	3.880	3.949	4.018	4.086	4.155
.880	3.659	3.731	3.803	3.875	3.946	4.017	4.088	4.159	4.229	4.299	4.369
.900	3.890	3.964	4.038	4.111	4.185	4.258	4.330	4.403	4.475	4.547	4.618
.920	4.168	4.245	4.321	4.397	4.472	4.547	4.622	4.696	4.771	4.845	4.918
.940	4.522	4.601	4.680	4.759	4.837	4.914	4.992	5.069	5.146	5.222	5.298
.950	4.743	4.825	4.905	4.985	5.065	5.144	5.223	5.302	5.380	5.458	5.535
.960	5.013	5.096	5.178	5.260	5.341	5.422	5.503	5.583	5.663	5.743	5.822
.970	5.356	5.441	5.526	5.610	5.693	5.777	5.860	5.942	6.024	6.106	6.187
.980	5.834	5.922	6.010	6.097	6.183	6.270	6.355	6.441	6.525	6.610	6.694
.990	6.638	6.731	6.823	6.915	7.006	7.097	7.187	7.277	7.366	7.455	7.543
.995	7.430	7.527	7.624	7.719	7.815	7.909	8.003	8.097	8.190	8.283	8.375
.999	9.233	9.339	9.443	9.547	9.651	9.753	9.855	9.957	10.057	10.158	10.257

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	2.50	2.55	2.60	2.65	2.70	2.75	2.80	2.85	2.90	2.95	3.00
.001	0.105	0.113	0.120	0.128	0.136	0.145	0.153	0.162	0.172	0.181	0.191
.005	0.206	0.218	0.230	0.243	0.255	0.268	0.282	0.295	0.309	0.323	0.338
.010	0.277	0.292	0.307	0.322	0.337	0.353	0.369	0.386	0.402	0.419	0.436
.020	0.376	0.394	0.412	0.431	0.449	0.468	0.488	0.507	0.527	0.547	0.567
.030	0.452	0.472	0.492	0.513	0.534	0.555	0.576	0.598	0.620	0.642	0.665
.040	0.516	0.538	0.560	0.582	0.605	0.628	0.651	0.674	0.698	0.722	0.746
.050	0.573	0.596	0.620	0.644	0.668	0.692	0.717	0.742	0.767	0.792	0.818
.060	0.625	0.650	0.675	0.700	0.725	0.751	0.777	0.803	0.829	0.856	0.882
.080	0.720	0.746	0.774	0.801	0.828	0.856	0.884	0.912	0.941	0.970	0.998
.100	0.805	0.834	0.863	0.892	0.921	0.951	0.981	1.011	1.041	1.072	1.102
.120	0.885	0.915	0.946	0.977	1.008	1.039	1.070	1.102	1.134	1.166	1.198
.140	0.960	0.992	1.024	1.057	1.089	1.122	1.155	1.188	1.221	1.254	1.287
.160	1.033	1.066	1.099	1.133	1.167	1.201	1.235	1.269	1.304	1.338	1.373
.180	1.103	1.137	1.172	1.207	1.242	1.277	1.312	1.348	1.384	1.419	1.455
.200	1.171	1.207	1.243	1.279	1.315	1.351	1.388	1.424	1.461	1.498	1.535
.220	1.238	1.275	1.312	1.349	1.387	1.424	1.462	1.499	1.537	1.575	1.613
.240	1.304	1.342	1.380	1.419	1.457	1.495	1.534	1.573	1.612	1.650	1.689
.260	1.370	1.409	1.448	1.487	1.527	1.566	1.606	1.645	1.685	1.725	1.765
.280	1.435	1.475	1.515	1.555	1.596	1.636	1.677	1.717	1.758	1.799	1.840
.300	1.500	1.541	1.582	1.623	1.664	1.706	1.747	1.789	1.830	1.872	1.914
.320	1.565	1.607	1.649	1.691	1.733	1.775	1.818	1.860	1.902	1.945	1.988
.340	1.630	1.673	1.715	1.759	1.802	1.845	1.888	1.931	1.975	2.018	2.062
.360	1.695	1.739	1.783	1.827	1.871	1.915	1.959	2.003	2.047	2.091	2.136
.380	1.761	1.806	1.851	1.895	1.940	1.985	2.030	2.075	2.120	2.165	2.210
.400	1.828	1.873	1.919	1.964	2.010	2.056	2.102	2.147	2.193	2.239	2.285
.420	1.895	1.941	1.988	2.034	2.081	2.127	2.174	2.221	2.267	2.314	2.361
.440	1.963	2.011	2.058	2.105	2.153	2.189	2.247	2.295	2.342	2.390	2.437
.460	2.033	2.081	2.129	2.177	2.225	2.274	2.322	2.370	2.418	2.467	2.515
.480	2.104	2.152	2.201	2.250	2.299	2.348	2.396	2.447	2.496	2.545	2.594
.500	2.176	2.226	2.275	2.325	2.375	2.425	2.475	2.524	2.574	2.624	2.674
.520	2.250	2.300	2.351	2.402	2.452	2.503	2.553	2.604	2.655	2.705	2.756
.540	2.325	2.377	2.428	2.480	2.531	2.583	2.634	2.686	2.737	2.788	2.840
.560	2.403	2.455	2.508	2.560	2.612	2.665	2.717	2.769	2.821	2.872	2.924
.580	2.483	2.536	2.590	2.643	2.696	2.749	2.802	2.841	2.906	2.954	3.013
.600	2.566	2.620	2.674	2.728	2.782	2.836	2.890	2.944	2.998	3.052	3.105
.620	2.652	2.707	2.762	2.815	2.871	2.919	2.981	3.036	3.090	3.145	3.200
.640	2.741	2.797	2.852	2.908	2.964	3.020	3.075	3.131	3.186	3.242	3.297
.660	2.833	2.890	2.947	3.004	3.060	3.116	3.173	3.230	3.286	3.342	3.397
.680	2.923	2.988	3.046	3.103	3.161	3.218	3.276	3.333	3.390	3.447	3.505
.700	3.032	3.091	3.150	3.208	3.267	3.325	3.383	3.441	3.500	3.558	3.616
.720	3.140	3.199	3.259	3.318	3.378	3.437	3.496	3.555	3.615	3.673	3.732
.740	3.253	3.314	3.375	3.435	3.496	3.556	3.616	3.676	3.736	3.796	3.856
.760	3.374	3.436	3.498	3.559	3.621	3.682	3.743	3.804	3.865	3.926	3.987
.780	3.504	3.567	3.630	3.693	3.755	3.817	3.880	3.942	4.004	4.056	4.128
.800	3.645	3.709	3.773	3.836	3.900	3.964	4.027	4.090	4.153	4.216	4.279
.820	3.798	3.863	3.928	3.993	4.058	4.123	4.187	4.251	4.316	4.380	4.444
.840	3.966	4.033	4.099	4.166	4.232	4.298	4.363	4.429	4.494	4.560	4.625
.860	4.155	4.223	4.290	4.358	4.426	4.492	4.560	4.627	4.694	4.761	4.827
.880	4.369	4.438	4.508	4.577	4.646	4.715	4.783	4.852	4.920	4.988	5.056
.900	4.618	4.690	4.761	4.832	4.902	4.973	5.043	5.113	5.183	5.253	5.322
.920	4.918	4.992	5.065	5.138	5.210	5.283	5.355	5.427	5.499	5.569	5.642
.940	5.298	5.374	5.449	5.525	5.600	5.675	5.749	5.823	5.897	5.971	6.045
.950	5.535	5.613	5.690	5.766	5.843	5.919	5.995	6.070	6.146	6.221	6.296
.960	5.822	5.901	5.980	6.058	6.136	6.214	6.291	6.369	6.446	6.522	6.599
.970	6.187	6.268	6.349	6.429	6.509	6.589	6.669	6.748	6.827	6.905	6.984
.980	6.694	6.778	6.861	6.944	7.027	7.109	7.191	7.273	7.355	7.436	7.517
.990	7.543	7.631	7.719	7.806	7.893	7.979	8.065	8.151	8.236	8.321	8.406
.995	8.375	8.466	8.558	8.649	8.739	8.829	8.919	9.008	9.097	9.186	9.274
.999	10.257	10.357	10.456	10.554	10.651	10.749	10.846	10.942	11.038	11.134	11.229

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	3.00	3.05	3.10	3.15	3.20	3.25	3.30	3.35	3.40	3.45	3.50
.001	0.191	0.200	0.211	0.221	0.231	0.242	0.253	0.264	0.276	0.287	0.299
.005	0.338	0.352	0.367	0.382	0.398	0.413	0.429	0.445	0.461	0.478	0.495
.010	0.436	0.453	0.471	0.489	0.507	0.525	0.543	0.562	0.581	0.600	0.620
.020	0.567	0.588	0.608	0.629	0.651	0.672	0.694	0.715	0.738	0.760	0.782
.030	0.665	0.687	0.710	0.733	0.757	0.780	0.804	0.828	0.852	0.876	0.901
.040	0.746	0.771	0.795	0.820	0.845	0.870	0.895	0.921	0.947	0.972	0.999
.050	0.818	0.843	0.869	0.896	0.922	0.948	0.975	1.002	1.029	1.056	1.084
.060	0.882	0.909	0.937	0.964	0.991	1.019	1.047	1.075	1.103	1.132	1.160
.080	0.998	1.027	1.057	1.086	1.115	1.145	1.175	1.205	1.235	1.266	1.296
.100	1.102	1.133	1.164	1.195	1.226	1.257	1.289	1.321	1.352	1.384	1.417
.120	1.198	1.230	1.262	1.295	1.328	1.360	1.393	1.427	1.460	1.493	1.527
.140	1.287	1.321	1.355	1.389	1.423	1.457	1.491	1.526	1.560	1.595	1.630
.160	1.373	1.408	1.443	1.478	1.513	1.549	1.584	1.620	1.655	1.691	1.727
.180	1.455	1.491	1.527	1.564	1.600	1.637	1.673	1.710	1.747	1.784	1.821
.200	1.535	1.572	1.609	1.647	1.684	1.722	1.759	1.797	1.835	1.873	1.911
.220	1.613	1.651	1.689	1.728	1.766	1.805	1.843	1.882	1.921	1.960	1.999
.240	1.689	1.720	1.768	1.807	1.847	1.886	1.926	1.965	2.005	2.045	2.085
.260	1.765	1.805	1.845	1.885	1.926	1.966	2.007	2.047	2.088	2.118	2.170
.280	1.840	1.881	1.922	1.963	2.004	2.045	2.087	2.128	2.170	2.211	2.253
.300	1.914	1.956	1.998	2.040	2.082	2.124	2.166	2.197	2.251	2.293	2.336
.320	1.988	2.030	2.073	2.116	2.159	2.202	2.245	2.288	2.331	2.375	2.418
.340	2.062	2.105	2.149	2.192	2.225	2.280	2.324	2.368	2.412	2.456	2.500
.360	2.136	2.180	2.225	2.269	2.314	2.358	2.403	2.447	2.492	2.537	2.582
.380	2.210	2.255	2.301	2.346	2.391	2.437	2.482	2.527	2.573	2.618	2.664
.400	2.285	2.331	2.377	2.423	2.469	2.515	2.562	2.608	2.654	2.700	2.747
.420	2.361	2.408	2.454	2.501	2.548	2.595	2.642	2.689	2.736	2.783	2.830
.440	2.437	2.485	2.532	2.580	2.628	2.675	2.723	2.771	2.818	2.866	2.914
.460	2.515	2.563	2.612	2.657	2.708	2.757	2.805	2.854	2.902	2.950	2.999
.480	2.594	2.643	2.692	2.741	2.790	2.839	2.888	2.938	2.987	3.036	3.085
.500	2.674	2.724	2.774	2.824	2.874	2.923	2.973	3.023	3.073	3.123	3.173
.520	2.756	2.807	2.857	2.908	2.959	3.009	3.060	3.110	3.161	3.212	3.258
.540	2.840	2.891	2.943	2.994	3.045	3.097	3.148	3.200	3.251	3.302	3.354
.560	2.924	2.978	3.015	3.082	3.135	3.187	3.239	3.291	3.343	3.395	3.447
.580	3.013	3.067	3.120	3.173	3.226	3.279	3.332	3.385	3.420	3.490	3.543
.600	3.105	3.159	3.213	3.267	3.320	3.374	3.427	3.481	3.535	3.588	3.642
.620	3.200	3.254	3.309	3.363	3.418	3.472	3.526	3.581	3.635	3.689	3.743
.640	3.297	3.353	3.408	3.463	3.518	3.574	3.629	3.684	3.739	3.794	3.849
.660	3.397	3.455	3.511	3.567	3.623	3.679	3.735	3.791	3.847	3.903	3.958
.680	3.505	3.562	3.619	3.676	3.732	3.789	3.846	3.903	3.959	4.016	4.072
.700	3.616	3.673	3.731	3.789	3.847	3.904	3.962	4.020	4.077	4.134	4.192
.720	3.732	3.791	3.850	3.909	3.967	4.026	4.084	4.142	4.201	4.259	4.317
.740	3.856	3.916	3.975	4.035	4.094	4.154	4.213	4.272	4.331	4.390	4.449
.760	3.987	4.048	4.108	4.169	4.229	4.290	4.350	4.410	4.470	4.530	4.590
.780	4.128	4.189	4.251	4.301	4.371	4.435	4.496	4.557	4.618	4.679	4.740
.800	4.279	4.342	4.404	4.467	4.529	4.592	4.654	4.716	4.778	4.840	4.902
.820	4.444	4.508	4.571	4.635	4.698	4.762	4.825	4.888	4.951	5.014	5.077
.840	4.625	4.690	4.755	4.814	4.884	4.949	5.013	5.078	5.142	5.206	5.270
.860	4.827	4.893	4.959	5.026	5.091	5.157	5.223	5.288	5.354	5.419	5.484
.880	5.056	5.124	5.191	5.259	5.326	5.393	5.460	5.527	5.594	5.661	5.727
.900	5.322	5.392	5.461	5.530	5.599	5.667	5.736	5.804	5.872	5.941	6.009
.920	5.642	5.713	5.784	5.855	5.925	5.996	6.066	6.136	6.206	6.276	6.346
.940	6.045	6.118	6.191	6.264	6.337	6.410	6.482	6.554	6.626	6.698	6.770
.950	6.296	6.370	6.445	6.519	6.593	6.667	6.741	6.814	6.888	6.960	7.034
.960	6.599	6.675	6.751	6.827	6.902	6.978	7.053	7.128	7.203	7.277	7.352
.970	6.984	7.062	7.140	7.217	7.295	7.372	7.449	7.526	7.602	7.678	7.755
.980	7.517	7.597	7.678	7.758	7.837	7.917	7.996	8.075	8.154	8.233	8.311
.990	8.406	8.490	8.575	8.658	8.742	8.825	8.908	8.991	9.073	9.156	9.238
.995	9.274	9.362	9.449	9.536	9.623	9.710	9.796	9.882	9.968	10.054	10.139
.999	11.229	11.324	11.418	11.512	11.606	11.699	11.792	11.885	11.977	12.069	12.161

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	3.50	3.55	3.60	3.65	3.70	3.75	3.80	3.85	3.90	3.95	4.00
.001	0.299	0.311	0.324	0.336	0.349	0.361	0.375	0.388	0.401	0.415	0.429
.005	0.495	0.512	0.529	0.546	0.563	0.581	0.599	0.617	0.635	0.654	0.672
.010	0.620	0.639	0.659	0.679	0.699	0.719	0.740	0.760	0.781	0.802	0.823
.020	0.782	0.805	0.828	0.851	0.874	0.897	0.921	0.944	0.968	0.992	1.016
.030	0.901	0.925	0.950	0.975	1.001	1.026	1.051	1.077	1.103	1.129	1.155
.040	0.999	1.025	1.051	1.078	1.105	1.131	1.159	1.186	1.213	1.241	1.268
.050	1.084	1.111	1.139	1.167	1.195	1.223	1.251	1.280	1.309	1.337	1.366
.060	1.160	1.189	1.218	1.247	1.276	1.305	1.335	1.364	1.394	1.424	1.454
.080	1.296	1.327	1.357	1.388	1.419	1.451	1.482	1.513	1.545	1.577	1.609
.100	1.417	1.449	1.481	1.514	1.546	1.579	1.612	1.645	1.678	1.711	1.745
.120	1.527	1.560	1.594	1.628	1.662	1.696	1.731	1.765	1.799	1.834	1.869
.140	1.630	1.665	1.700	1.735	1.770	1.806	1.841	1.877	1.912	1.948	1.984
.160	1.727	1.763	1.800	1.836	1.872	1.909	1.945	1.982	2.019	2.056	2.093
.180	1.821	1.858	1.895	1.933	1.970	2.008	2.045	2.083	2.121	2.159	2.197
.200	1.911	1.949	1.988	2.026	2.064	2.103	2.142	2.180	2.219	2.258	2.297
.220	1.999	2.038	2.077	2.117	2.156	2.195	2.235	2.275	2.314	2.354	2.394
.240	2.085	2.125	2.165	2.205	2.246	2.286	2.326	2.367	2.407	2.448	2.489
.260	2.170	2.210	2.251	2.292	2.334	2.375	2.416	2.457	2.499	2.540	2.582
.280	2.253	2.295	2.337	2.378	2.420	2.462	2.504	2.546	2.589	2.631	2.673
.300	2.336	2.378	2.421	2.464	2.506	2.549	2.592	2.635	2.678	2.721	2.764
.320	2.418	2.461	2.505	2.548	2.592	2.635	2.679	2.722	2.766	2.810	2.854
.340	2.500	2.544	2.588	2.632	2.677	2.721	2.765	2.810	2.854	2.898	2.943
.360	2.582	2.627	2.672	2.717	2.762	2.807	2.852	2.897	2.942	2.987	3.032
.380	2.664	2.710	2.755	2.801	2.847	2.892	2.938	2.984	3.030	3.076	3.122
.400	2.747	2.793	2.839	2.886	2.932	2.979	3.025	3.072	3.118	3.165	3.211
.420	2.830	2.877	2.924	2.971	3.018	3.065	3.113	3.160	3.207	3.254	3.302
.440	2.914	2.962	3.009	3.057	3.105	3.153	3.201	3.249	3.297	3.345	3.392
.460	2.999	3.047	3.096	3.144	3.193	3.242	3.290	3.339	3.387	3.436	3.484
.480	3.085	3.134	3.184	3.233	3.282	3.331	3.381	3.430	3.479	3.528	3.578
.500	3.173	3.223	3.273	3.323	3.373	3.422	3.472	3.522	3.572	3.622	3.672
.520	3.258	3.313	3.363	3.414	3.465	3.515	3.566	3.616	3.667	3.715	3.768
.540	3.354	3.405	3.456	3.507	3.559	3.610	3.661	3.713	3.764	3.815	3.866
.560	3.447	3.499	3.551	3.603	3.655	3.698	3.759	3.811	3.863	3.915	3.967
.580	3.543	3.596	3.644	3.701	3.754	3.806	3.859	3.912	3.964	4.017	4.070
.600	3.642	3.695	3.749	3.802	3.855	3.904	3.962	4.015	4.069	4.122	4.175
.620	3.743	3.798	3.849	3.906	3.960	4.014	4.068	4.122	4.176	4.230	4.284
.640	3.849	3.904	3.959	4.014	4.068	4.123	4.178	4.233	4.288	4.342	4.397
.660	3.958	4.014	4.070	4.125	4.181	4.236	4.292	4.342	4.403	4.458	4.514
.680	4.072	4.129	4.185	4.242	4.298	4.354	4.411	4.467	4.523	4.579	4.635
.700	4.192	4.244	4.306	4.363	4.421	4.478	4.535	4.592	4.649	4.705	4.762
.720	4.317	4.375	4.433	4.491	4.549	4.607	4.665	4.723	4.780	4.832	4.896
.740	4.449	4.508	4.567	4.626	4.685	4.741	4.802	4.861	4.919	4.978	5.036
.760	4.590	4.650	4.710	4.769	4.829	4.888	4.948	5.007	5.067	5.126	5.185
.780	4.740	4.801	4.861	4.922	4.983	5.043	5.103	5.164	5.224	5.284	5.344
.800	4.902	4.963	5.025	5.087	5.148	5.209	5.271	5.332	5.393	5.454	5.515
.820	5.077	5.140	5.203	5.265	5.328	5.390	5.452	5.514	5.576	5.639	5.672
.840	5.270	5.334	5.397	5.461	5.525	5.588	5.651	5.715	5.778	5.841	5.904
.860	5.484	5.549	5.614	5.679	5.744	5.808	5.873	5.937	6.001	6.066	6.130
.880	5.727	5.793	5.860	5.926	5.992	6.058	6.123	6.189	6.252	6.320	6.385
.900	6.009	6.076	6.144	6.212	6.279	6.346	6.413	6.480	6.547	6.614	6.681
.920	6.346	6.415	6.484	6.554	6.623	6.692	6.760	6.829	6.898	6.966	7.034
.940	6.770	6.841	6.913	6.984	7.055	7.126	7.197	7.267	7.338	7.408	7.478
.950	7.034	7.106	7.179	7.251	7.324	7.396	7.467	7.539	7.611	7.682	7.754
.960	7.352	7.426	7.500	7.573	7.647	7.721	7.794	7.867	7.940	8.013	8.085
.970	7.755	7.830	7.906	7.982	8.057	8.132	8.207	8.282	8.357	8.431	8.505
.980	8.311	8.389	8.467	8.545	8.623	8.700	8.777	8.854	8.931	9.008	9.084
.990	9.238	9.319	9.401	9.482	9.563	9.644	9.725	9.805	9.885	9.965	10.045
.995	10.139	10.224	10.309	10.393	10.477	10.561	10.645	10.728	10.812	10.895	10.977
.999	12.161	12.252	12.344	12.434	12.525	12.615	12.705	12.795	12.884	12.973	13.062

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	4.00	4.05	4.10	4.15	4.20	4.25	4.30	4.35	4.40	4.45	4.50
.001	0.429	0.443	0.457	0.471	0.485	0.500	0.515	0.530	0.545	0.560	0.576
.005	0.672	0.691	0.710	0.729	0.748	0.768	0.787	0.807	0.827	0.847	0.867
.010	0.823	0.845	0.866	0.888	0.910	0.932	0.954	0.976	0.999	1.021	1.044
.020	1.016	1.041	1.065	1.090	1.114	1.139	1.164	1.190	1.215	1.241	1.266
.030	1.155	1.181	1.208	1.234	1.261	1.288	1.315	1.342	1.369	1.397	1.424
.040	1.268	1.296	1.324	1.352	1.380	1.409	1.437	1.466	1.495	1.523	1.552
.050	1.366	1.395	1.425	1.454	1.483	1.513	1.543	1.572	1.602	1.632	1.663
.060	1.454	1.484	1.514	1.545	1.575	1.606	1.637	1.667	1.698	1.730	1.761
.080	1.609	1.641	1.673	1.705	1.737	1.769	1.802	1.835	1.867	1.900	1.933
.100	1.745	1.778	1.812	1.845	1.879	1.913	1.947	1.981	2.015	2.050	2.084
.120	1.869	1.904	1.938	1.973	2.008	2.044	2.079	2.114	2.150	2.185	2.221
.140	1.984	2.020	2.056	2.092	2.128	2.165	2.201	2.238	2.274	2.311	2.348
.160	2.093	2.130	2.167	2.204	2.242	2.279	2.316	2.354	2.392	2.429	2.467
.180	2.197	2.235	2.273	2.311	2.349	2.388	2.426	2.465	2.503	2.542	2.581
.200	2.297	2.336	2.375	2.408	2.453	2.493	2.532	2.571	2.611	2.650	2.690
.220	2.394	2.434	2.474	2.514	2.554	2.594	2.634	2.675	2.715	2.742	2.796
.240	2.489	2.529	2.570	2.611	2.652	2.693	2.734	2.775	2.816	2.857	2.899
.260	2.582	2.623	2.665	2.706	2.748	2.790	2.832	2.874	2.916	2.958	3.000
.280	2.673	2.715	2.758	2.800	2.843	2.885	2.928	2.971	3.013	3.056	3.099
.300	2.764	2.807	2.850	2.893	2.936	2.980	3.023	3.066	3.110	3.153	3.197
.320	2.854	2.897	2.941	2.985	3.029	3.073	3.117	3.161	3.205	3.249	3.294
.340	2.943	2.988	3.032	3.077	3.121	3.166	3.211	3.256	3.300	3.345	3.390
.360	3.032	3.078	3.123	3.168	3.213	3.259	3.304	3.350	3.395	3.441	3.486
.380	3.122	3.168	3.214	3.260	3.306	3.352	3.398	3.444	3.490	3.536	3.582
.400	3.211	3.258	3.305	3.351	3.398	3.445	3.491	3.538	3.585	3.632	3.679
.420	3.302	3.349	3.396	3.443	3.491	3.538	3.586	3.633	3.680	3.728	3.775
.440	3.392	3.440	3.488	3.536	3.584	3.632	3.680	3.728	3.777	3.825	3.873
.460	3.484	3.533	3.582	3.630	3.679	3.728	3.776	3.825	3.874	3.922	3.971
.480	3.578	3.627	3.676	3.725	3.775	3.824	3.873	3.913	3.972	4.021	4.071
.500	3.672	3.722	3.772	3.822	3.872	3.922	3.972	4.022	4.072	4.111	4.171
.520	3.768	3.819	3.869	3.920	3.971	4.021	4.072	4.117	4.173	4.223	4.274
.540	3.866	3.918	3.969	4.020	4.071	4.123	4.174	4.225	4.255	4.327	4.379
.560	3.967	4.019	4.071	4.122	4.174	4.226	4.278	4.330	4.382	4.428	4.485
.580	4.070	4.122	4.175	4.227	4.280	4.332	4.385	4.437	4.487	4.542	4.595
.600	4.175	4.229	4.282	4.335	4.388	4.441	4.493	4.548	4.601	4.653	4.707
.620	4.284	4.338	4.392	4.424	4.500	4.554	4.607	4.638	4.715	4.763	4.810
.640	4.397	4.451	4.506	4.561	4.615	4.670	4.724	4.833	4.887	4.942	4.942
.660	4.514	4.569	4.624	4.680	4.735	4.790	4.845	4.900	4.955	5.010	5.040
.680	4.635	4.691	4.747	4.803	4.859	4.915	4.971	5.025	5.083	5.113	5.194
.700	4.762	4.819	4.876	4.932	4.989	5.046	5.102	5.159	5.215	5.272	5.328
.720	4.896	4.953	5.011	5.068	5.125	5.183	5.240	5.297	5.328	5.412	5.469
.740	5.036	5.094	5.153	5.211	5.269	5.301	5.385	5.443	5.500	5.559	5.617
.760	5.185	5.244	5.303	5.362	5.421	5.480	5.539	5.598	5.657	5.715	5.774
.780	5.344	5.404	5.464	5.524	5.584	5.644	5.703	5.763	5.822	5.882	5.941
.800	5.515	5.576	5.637	5.698	5.758	5.804	5.876	5.940	6.000	6.061	6.106
.820	5.672	5.762	5.824	5.886	5.947	6.009	6.071	6.132	6.193	6.255	6.316
.840	5.904	5.967	6.029	6.092	6.155	6.217	6.280	6.311	6.405	6.467	6.529
.860	6.130	6.194	6.258	6.321	6.385	6.449	6.512	6.576	6.639	6.669	6.766
.880	6.385	6.450	6.515	6.572	6.645	6.710	6.775	6.840	6.904	6.969	7.033
.900	6.681	6.747	6.814	6.880	6.946	7.013	7.079	7.145	7.210	7.276	7.342
.920	7.034	7.102	7.170	7.238	7.306	7.374	7.441	7.509	7.576	7.643	7.711
.940	7.478	7.548	7.618	7.688	7.758	7.826	7.896	7.966	8.035	8.104	8.173
.950	7.754	7.825	7.896	7.967	8.038	8.108	8.179	8.249	8.319	8.389	8.459
.960	8.085	8.158	8.230	8.302	8.364	8.446	8.518	8.590	8.661	8.733	8.804
.970	8.505	8.579	8.653	8.727	8.801	8.874	8.948	9.021	9.094	9.167	9.240
.980	9.084	9.160	9.236	9.312	9.388	9.464	9.539	9.615	9.690	9.765	9.840
.990	10.045	10.125	10.204	10.283	10.362	10.441	10.520	10.598	10.677	10.755	10.833
.995	10.977	11.060	11.142	11.225	11.307	11.388	11.470	11.552	11.633	11.714	11.795
.999	13.062	13.151	13.239	13.327	13.416	13.503	13.591	13.678	13.765	13.852	13.939

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	4.50	4.55	4.60	4.65	4.70	4.75	4.80	4.85	4.90	4.95	5.00
.001	0.576	0.592	0.607	0.623	0.640	0.656	0.672	0.689	0.706	0.722	0.739
.005	0.867	0.888	0.908	0.929	0.950	0.971	0.992	1.013	1.035	1.056	1.078
.010	1.044	1.067	1.090	1.113	1.136	1.160	1.183	1.207	1.231	1.255	1.279
.020	1.266	1.292	1.318	1.344	1.370	1.396	1.423	1.449	1.476	1.503	1.530
.030	1.424	1.452	1.480	1.508	1.536	1.564	1.592	1.620	1.649	1.677	1.706
.040	1.552	1.581	1.611	1.640	1.669	1.699	1.729	1.758	1.788	1.818	1.848
.050	1.663	1.693	1.723	1.754	1.784	1.815	1.846	1.877	1.908	1.939	1.970
.060	1.761	1.792	1.823	1.855	1.887	1.918	1.950	1.982	2.014	2.046	2.078
.080	1.933	1.966	1.999	2.032	2.066	2.099	2.133	2.166	2.200	2.234	2.268
.100	2.084	2.119	2.153	2.188	2.222	2.257	2.292	2.327	2.362	2.397	2.433
.120	2.221	2.257	2.292	2.328	2.364	2.400	2.436	2.473	2.509	2.545	2.582
.140	2.348	2.385	2.422	2.459	2.496	2.533	2.570	2.607	2.645	2.682	2.719
.160	2.467	2.505	2.543	2.581	2.619	2.657	2.695	2.734	2.772	2.810	2.849
.180	2.581	2.620	2.658	2.697	2.736	2.775	2.815	2.854	2.893	2.932	2.972
.200	2.690	2.730	2.769	2.809	2.849	2.889	2.929	2.969	3.009	3.049	3.090
.220	2.796	2.836	2.877	2.918	2.958	2.999	3.040	3.081	3.121	3.162	3.203
.240	2.899	2.940	2.981	3.023	3.064	3.106	3.147	3.189	3.231	3.272	3.314
.260	3.000	3.042	3.084	3.126	3.168	3.210	3.253	3.295	3.338	3.380	3.422
.280	3.099	3.142	3.184	3.227	3.270	3.313	3.356	3.399	3.442	3.486	3.529
.300	3.197	3.240	3.284	3.327	3.371	3.415	3.458	3.502	3.546	3.590	3.634
.320	3.294	3.338	3.382	3.426	3.471	3.515	3.559	3.604	3.648	3.693	3.737
.340	3.390	3.435	3.480	3.525	3.570	3.615	3.660	3.705	3.750	3.795	3.840
.360	3.486	3.532	3.577	3.623	3.669	3.714	3.760	3.806	3.851	3.897	3.943
.380	3.582	3.628	3.670	3.721	3.767	3.813	3.860	3.906	3.952	3.999	4.045
.400	3.679	3.725	3.767	3.819	3.866	3.913	3.959	4.007	4.054	4.101	4.148
.420	3.775	3.823	3.870	3.918	3.965	4.013	4.060	4.108	4.155	4.203	4.248
.440	3.873	3.921	3.949	4.017	4.065	4.113	4.161	4.204	4.258	4.306	4.354
.460	3.971	4.000	4.068	4.117	4.166	4.215	4.263	4.312	4.361	4.410	4.458
.480	4.071	4.120	4.164	4.219	4.257	4.317	4.367	4.416	4.465	4.515	4.564
.500	4.171	4.221	4.271	4.321	4.371	4.421	4.471	4.510	4.571	4.621	4.671
.520	4.274	4.325	4.375	4.426	4.476	4.527	4.577	4.628	4.678	4.729	4.779
.540	4.379	4.430	4.481	4.532	4.583	4.634	4.685	4.737	4.788	4.839	4.890
.560	4.485	4.537	4.589	4.641	4.692	4.738	4.796	4.823	4.899	4.951	5.003
.580	4.595	4.647	4.699	4.752	4.804	4.857	4.909	4.961	5.014	5.066	5.118
.600	4.707	4.748	4.813	4.866	4.919	4.972	5.025	5.078	5.131	5.184	5.237
.620	4.810	4.876	4.930	4.977	5.037	5.091	5.144	5.198	5.251	5.305	5.358
.640	4.942	4.971	5.050	5.105	5.159	5.213	5.267	5.322	5.376	5.430	5.484
.660	5.040	5.120	5.175	5.230	5.285	5.340	5.395	5.450	5.504	5.559	5.614
.680	5.194	5.250	5.305	5.361	5.417	5.472	5.528	5.583	5.639	5.694	5.749
.700	5.328	5.385	5.441	5.497	5.553	5.610	5.666	5.721	5.778	5.834	5.890
.720	5.469	5.526	5.583	5.640	5.697	5.754	5.811	5.868	5.924	5.981	6.038
.740	5.617	5.675	5.733	5.790	5.848	5.906	5.963	6.021	6.078	6.136	6.193
.760	5.774	5.833	5.891	5.950	6.008	6.067	6.125	6.183	6.241	6.300	6.358
.780	5.941	6.001	6.060	6.119	6.179	6.238	6.297	6.356	6.383	6.474	6.533
.800	6.106	6.181	6.242	6.302	6.362	6.422	6.482	6.542	6.601	6.661	6.721
.820	6.316	6.377	6.438	6.499	6.560	6.621	6.682	6.742	6.803	6.864	6.924
.840	6.529	6.591	6.653	6.715	6.777	6.839	6.901	6.962	7.024	7.067	7.147
.860	6.766	6.829	6.892	6.955	7.018	7.081	7.143	7.206	7.269	7.331	7.394
.880	7.033	7.097	7.161	7.226	7.290	7.354	7.417	7.481	7.545	7.609	7.672
.900	7.342	7.407	7.473	7.538	7.604	7.669	7.734	7.799	7.861	7.929	7.994
.920	7.711	7.778	7.845	7.911	7.978	8.045	8.111	8.178	8.244	8.311	8.377
.940	8.173	8.242	8.311	8.379	8.448	8.516	8.584	8.653	8.721	8.789	8.857
.950	8.459	8.529	8.599	8.669	8.738	8.808	8.877	8.946	9.016	9.085	9.154
.960	8.804	8.875	8.946	9.017	9.088	9.159	9.229	9.300	9.368	9.440	9.510
.970	9.240	9.312	9.385	9.457	9.530	9.602	9.674	9.746	9.818	9.889	9.961
.980	9.840	9.914	9.989	10.063	10.137	10.212	10.286	10.359	10.433	10.507	10.580
.990	10.833	10.911	10.989	11.066	11.143	11.221	11.298	11.375	11.451	11.528	11.605
.995	11.795	11.875	11.956	12.036	12.116	12.196	12.276	12.356	12.436	12.515	12.594
.999	13.939	14.025	14.111	14.197	14.283	14.369	14.454	14.539	14.625	14.709	14.794

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	5.00	5.10	5.20	5.30	5.40	5.50	5.60	5.70	5.80	5.90	6.00
.001	0.739	0.774	0.809	0.844	0.880	0.917	0.954	0.992	1.030	1.068	1.107
.005	1.078	1.122	1.166	1.211	1.256	1.302	1.348	1.394	1.441	1.489	1.537
.010	1.279	1.328	1.377	1.426	1.476	1.527	1.578	1.629	1.681	1.733	1.785
.020	1.530	1.584	1.638	1.693	1.749	1.804	1.861	1.917	1.974	2.031	2.089
.030	1.706	1.764	1.822	1.880	1.939	1.999	2.058	2.118	2.179	2.239	2.300
.040	1.848	1.909	1.970	2.031	2.092	2.154	2.217	2.279	2.342	2.406	2.469
.050	1.970	2.033	2.096	2.159	2.223	2.287	2.352	2.417	2.482	2.547	2.613
.060	2.078	2.143	2.208	2.273	2.339	2.405	2.472	2.538	2.605	2.672	2.740
.080	2.268	2.335	2.404	2.472	2.541	2.610	2.680	2.750	2.820	2.890	2.961
.100	2.433	2.503	2.574	2.646	2.717	2.789	2.861	2.933	3.006	3.079	3.152
.120	2.582	2.655	2.728	2.802	2.876	2.950	3.024	3.099	3.173	3.248	3.324
.140	2.719	2.795	2.870	2.946	3.022	3.098	3.174	3.251	3.328	3.405	3.482
.160	2.849	2.926	3.003	3.081	3.159	3.237	3.315	3.393	3.472	3.551	3.630
.180	2.972	3.051	3.130	3.209	3.289	3.368	3.448	3.528	3.609	3.689	3.770
.200	3.090	3.170	3.251	3.332	3.413	3.494	3.576	3.658	3.739	3.821	3.904
.220	3.203	3.286	3.368	3.450	3.533	3.616	3.699	3.782	3.866	3.949	4.033
.240	3.314	3.398	3.482	3.566	3.650	3.734	3.819	3.903	3.988	4.073	4.158
.260	3.422	3.508	3.593	3.678	3.764	3.849	3.935	4.021	4.107	4.194	4.280
.280	3.529	3.615	3.702	3.789	3.876	3.963	4.050	4.137	4.224	4.312	4.399
.300	3.634	3.721	3.809	3.897	3.986	4.074	4.162	4.251	4.340	4.428	4.517
.320	3.737	3.817	3.916	4.005	4.094	4.184	4.263	4.363	4.453	4.543	4.633
.340	3.840	3.931	4.021	4.112	4.202	4.293	4.384	4.475	4.566	4.657	4.748
.360	3.943	4.034	4.126	4.207	4.310	4.402	4.494	4.586	4.678	4.771	4.863
.380	4.045	4.138	4.231	4.324	4.417	4.510	4.603	4.697	4.784	4.884	4.977
.400	4.148	4.242	4.336	4.430	4.524	4.619	4.713	4.807	4.902	4.996	5.091
.420	4.248	4.346	4.441	4.536	4.632	4.727	4.823	4.918	5.014	5.110	5.205
.440	4.354	4.451	4.547	4.643	4.740	4.837	4.933	5.030	5.127	5.223	5.320
.460	4.458	4.556	4.654	4.739	4.849	4.947	5.044	5.142	5.240	5.338	5.436
.480	4.564	4.663	4.762	4.860	4.959	5.058	5.157	5.256	5.354	5.452	5.552
.500	4.671	4.771	4.871	4.971	5.071	5.170	5.270	5.357	5.470	5.570	5.670
.520	4.779	4.881	4.982	5.083	5.184	5.271	5.359	5.473	5.581	5.689	5.790
.540	4.890	4.992	5.093	5.195	5.292	5.401	5.503	5.605	5.707	5.809	5.911
.560	5.003	5.106	5.210	5.313	5.416	5.520	5.623	5.726	5.829	5.932	6.035
.580	5.118	5.223	5.327	5.432	5.536	5.641	5.745	5.849	5.954	6.058	6.162
.600	5.237	5.342	5.448	5.554	5.659	5.765	5.870	5.976	6.074	6.187	6.292
.620	5.358	5.465	5.572	5.678	5.786	5.893	5.999	6.106	6.212	6.315	6.393
.640	5.484	5.592	5.700	5.808	5.916	6.024	6.132	6.240	6.347	6.455	6.563
.660	5.614	5.716	5.833	5.942	6.051	6.160	6.270	6.378	6.455	6.596	6.705
.680	5.749	5.860	5.971	6.081	6.192	6.302	6.412	6.522	6.632	6.742	6.835
.700	5.890	6.002	6.114	6.226	6.334	6.448	6.561	6.672	6.783	6.895	7.006
.720	6.038	6.151	6.265	6.378	6.491	6.604	6.716	6.829	6.941	7.054	7.166
.740	6.193	6.308	6.423	6.537	6.652	6.766	6.880	6.994	7.108	7.221	7.335
.760	6.358	6.474	6.590	6.706	6.822	6.937	7.053	7.168	7.283	7.398	7.513
.780	6.533	6.651	6.768	6.886	7.003	7.120	7.237	7.354	7.470	7.587	7.703
.800	6.721	6.840	6.959	7.078	7.197	7.316	7.434	7.533	7.670	7.788	7.906
.820	6.924	7.045	7.166	7.287	7.407	7.527	7.647	7.767	7.887	8.006	8.126
.840	7.147	7.270	7.392	7.515	7.637	7.759	7.881	8.002	8.123	8.245	8.365
.860	7.394	7.519	7.643	7.767	7.891	8.015	8.139	8.262	8.385	8.508	8.631
.880	7.672	7.799	7.926	8.052	8.178	8.304	8.430	8.555	8.680	8.805	8.930
.900	7.994	8.123	8.252	8.381	8.509	8.638	8.765	8.893	9.021	9.148	9.275
.920	8.377	8.509	8.641	8.772	8.903	9.034	9.165	9.295	9.425	9.555	9.685
.940	8.857	8.992	9.127	9.262	9.397	9.531	9.665	9.798	9.931	10.061	10.197
.950	9.154	9.291	9.428	9.565	9.701	9.838	9.973	10.109	10.244	10.372	10.513
.960	9.510	9.650	9.790	9.929	10.068	10.206	10.344	10.478	10.619	10.756	10.893
.970	9.961	10.104	10.246	10.388	10.530	10.671	10.812	10.952	11.092	11.232	11.371
.980	10.580	10.727	10.873	11.019	11.164	11.309	11.453	11.597	11.741	11.884	12.027
.990	11.605	11.757	11.909	12.061	12.212	12.362	12.513	12.662	12.811	12.960	13.108
.995	12.594	12.752	12.910	13.066	13.223	13.378	13.534	13.688	13.843	13.996	14.150
.999	14.794	14.963	15.131	15.299	15.466	15.632	15.798	15.963	16.127	16.291	16.455

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	6.00	6.10	6.20	6.30	6.40	6.50	6.60	6.70	6.80	6.90	7.00
.001	1.107	1.147	1.186	1.227	1.267	1.309	1.350	1.392	1.434	1.477	1.520
.005	1.537	1.585	1.634	1.683	1.733	1.783	1.833	1.883	1.934	1.986	2.037
.010	1.785	1.838	1.891	1.945	1.999	2.053	2.108	2.163	2.219	2.274	2.330
.020	2.089	2.147	2.206	2.264	2.323	2.383	2.442	2.502	2.563	2.623	2.684
.030	2.300	2.362	2.424	2.486	2.548	2.611	2.673	2.737	2.800	2.864	2.928
.040	2.469	2.533	2.597	2.662	2.727	2.792	2.857	2.923	2.989	3.055	3.121
.050	2.613	2.679	2.745	2.812	2.879	2.946	3.013	3.081	3.149	3.217	3.285
.060	2.740	2.808	2.876	2.944	3.013	3.082	3.151	3.220	3.290	3.360	3.430
.080	2.961	3.031	3.103	3.174	3.245	3.317	3.389	3.461	3.534	3.606	3.679
.100	3.152	3.225	3.299	3.373	3.447	3.521	3.595	3.670	3.745	3.820	3.895
.120	3.324	3.399	3.475	3.551	3.627	3.703	3.780	3.856	3.933	4.010	4.088
.140	3.482	3.559	3.637	3.715	3.793	3.871	3.949	4.028	4.107	4.185	4.264
.160	3.630	3.709	3.788	3.868	3.948	4.027	4.108	4.188	4.268	4.349	4.407
.180	3.770	3.851	3.932	4.013	4.094	4.176	4.257	4.339	4.421	4.503	4.585
.200	3.904	3.986	4.069	4.151	4.234	4.317	4.400	4.483	4.567	4.650	4.734
.220	4.033	4.116	4.200	4.284	4.369	4.453	4.537	4.622	4.707	4.792	4.877
.240	4.158	4.243	4.328	4.414	4.499	4.585	4.671	4.757	4.843	4.929	5.015
.260	4.280	4.366	4.453	4.540	4.626	4.713	4.800	4.888	4.975	5.062	5.146
.280	4.399	4.487	4.575	4.663	4.751	4.839	4.927	5.016	5.104	5.193	5.281
.300	4.517	4.606	4.695	4.784	4.874	4.963	5.052	5.142	5.231	5.321	5.411
.320	4.633	4.723	4.814	4.904	4.994	5.085	5.175	5.266	5.357	5.448	5.538
.340	4.748	4.840	4.931	5.023	5.114	5.206	5.297	5.389	5.481	5.573	5.665
.360	4.863	4.955	5.048	5.140	5.233	5.326	5.418	5.511	5.604	5.697	5.790
.380	4.977	5.071	5.164	5.258	5.351	5.445	5.539	5.633	5.727	5.821	5.915
.400	5.091	5.186	5.280	5.375	5.470	5.565	5.659	5.754	5.849	5.944	6.039
.420	5.205	5.301	5.397	5.492	5.588	5.684	5.780	5.876	5.972	6.068	6.164
.440	5.320	5.417	5.514	5.610	5.707	5.804	5.901	5.998	6.095	6.190	6.289
.460	5.436	5.533	5.631	5.729	5.827	5.925	6.023	6.121	6.219	6.317	6.413
.480	5.552	5.651	5.750	5.849	5.948	6.039	6.146	6.245	6.344	6.443	6.541
.500	5.670	5.770	5.870	5.970	6.070	6.170	6.270	6.370	6.462	6.570	6.670
.520	5.790	5.891	5.984	6.093	6.194	6.295	6.396	6.497	6.598	6.699	6.791
.540	5.911	6.014	6.108	6.218	6.320	6.422	6.524	6.624	6.727	6.829	6.931
.560	6.035	6.139	6.242	6.345	6.444	6.551	6.654	6.757	6.860	6.963	7.065
.580	6.162	6.266	6.370	6.475	6.579	6.683	6.787	6.891	6.995	7.099	7.193
.600	6.292	6.397	6.502	6.608	6.713	6.818	6.923	7.028	7.133	7.238	7.343
.620	6.393	6.532	6.630	6.744	6.850	6.956	7.063	7.169	7.275	7.381	7.487
.640	6.563	6.637	6.778	6.876	6.992	7.099	7.207	7.314	7.421	7.528	7.635
.660	6.705	6.813	6.922	7.030	7.139	7.247	7.355	7.463	7.572	7.680	7.788
.680	6.835	6.962	7.071	7.181	7.291	7.400	7.507	7.619	7.708	7.837	7.946
.700	7.006	7.116	7.227	7.338	7.449	7.559	7.670	7.780	7.891	8.001	8.111
.720	7.166	7.278	7.390	7.502	7.614	7.687	7.838	7.949	8.061	8.172	8.283
.740	7.335	7.448	7.562	7.675	7.788	7.901	8.014	8.127	8.239	8.352	8.464
.760	7.513	7.628	7.743	7.857	7.971	8.086	8.200	8.314	8.428	8.542	8.655
.780	7.703	7.819	7.935	8.051	8.167	8.282	8.398	8.513	8.628	8.743	8.858
.800	7.906	8.024	8.141	8.258	8.375	8.492	8.609	8.723	8.843	8.959	9.075
.820	8.126	8.245	8.364	8.482	8.601	8.720	8.838	8.956	9.074	9.192	9.310
.840	8.365	8.486	8.596	8.684	8.847	8.968	9.087	9.207	9.327	9.446	9.566
.860	8.631	8.754	8.876	8.998	9.120	9.242	9.363	9.485	9.606	9.727	9.848
.880	8.930	9.055	9.179	9.303	9.427	9.551	9.674	9.797	9.921	10.044	10.166
.900	9.275	9.401	9.528	9.654	9.780	9.906	10.031	10.157	10.282	10.407	10.532
.920	9.685	9.814	9.943	10.072	10.200	10.328	10.456	10.584	10.712	10.839	10.966
.940	10.197	10.322	10.461	10.593	10.724	10.856	10.987	11.117	11.248	11.378	11.508
.950	10.513	10.647	10.781	10.915	11.048	11.181	11.314	11.446	11.579	11.711	11.842
.960	10.893	11.029	11.165	11.301	11.436	11.571	11.706	11.841	11.975	12.109	12.243
.970	11.371	11.510	11.648	11.787	11.925	12.062	12.200	12.337	12.474	12.610	12.747
.980	12.027	12.169	12.312	12.453	12.595	12.736	12.877	13.017	13.157	13.297	13.436
.990	13.108	13.256	13.404	13.551	13.698	13.844	13.990	14.136	14.281	14.426	14.571
.995	14.150	14.303	14.455	14.607	14.759	14.910	15.060	15.211	15.361	15.510	15.660
.999	16.455	16.618	16.780	16.942	17.103	17.264	17.425	17.585	17.744	17.903	18.062

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	7.00	7.10	7.20	7.30	7.40	7.50	7.60	7.70	7.80	7.90	8.00
.001	1.520	1.564	1.608	1.652	1.696	1.741	1.787	1.832	1.878	1.924	1.971
.005	2.037	2.089	2.142	2.194	2.247	2.300	2.354	2.408	2.462	2.516	2.571
.010	2.330	2.387	2.443	2.500	2.557	2.615	2.672	2.730	2.789	2.847	2.906
.020	2.684	2.745	2.807	2.868	2.930	2.992	3.055	3.118	3.181	3.244	3.307
.030	2.928	2.992	3.057	3.121	3.186	3.252	3.317	3.383	3.449	3.515	3.581
.040	3.121	3.188	3.255	3.322	3.389	3.457	3.525	3.593	3.661	3.729	3.798
.050	3.285	3.354	3.423	3.492	3.561	3.630	3.700	3.770	3.840	3.910	3.981
.060	3.430	3.500	3.570	3.641	3.712	3.783	3.854	3.926	3.997	4.069	4.141
.080	3.679	3.752	3.826	3.899	3.973	4.046	4.120	4.195	4.269	4.343	4.418
.100	3.895	3.970	4.046	4.121	4.197	4.273	4.350	4.426	4.503	4.579	4.656
.120	4.088	4.165	4.243	4.320	4.398	4.476	4.554	4.633	4.711	4.790	4.868
.140	4.264	4.344	4.423	4.502	4.582	4.662	4.742	4.822	4.902	4.982	5.063
.160	4.407	4.510	4.591	4.672	4.753	4.835	4.916	4.998	5.080	5.161	5.243
.180	4.585	4.667	4.750	4.832	4.915	4.998	5.081	5.164	5.247	5.330	5.414
.200	4.734	4.817	4.901	4.985	5.069	5.153	5.238	5.322	5.407	5.491	5.569
.220	4.877	4.962	5.047	5.132	5.217	5.303	5.389	5.474	5.560	5.646	5.732
.240	5.015	5.101	5.188	5.274	5.361	5.448	5.534	5.621	5.708	5.795	5.882
.260	5.146	5.237	5.325	5.412	5.500	5.588	5.676	5.764	5.852	5.941	6.029
.280	5.281	5.370	5.459	5.548	5.637	5.726	5.815	5.904	5.993	6.082	6.172
.300	5.411	5.501	5.590	5.680	5.770	5.861	5.951	6.041	6.131	6.222	6.312
.320	5.538	5.629	5.720	5.811	5.902	5.994	6.085	6.176	6.264	6.359	6.450
.340	5.665	5.757	5.849	5.941	6.033	6.125	6.217	6.310	6.402	6.494	6.554
.360	5.790	5.883	5.976	6.069	6.162	6.256	6.349	6.442	6.536	6.629	6.722
.380	5.915	6.009	6.103	6.197	6.291	6.385	6.480	6.574	6.635	6.763	6.857
.400	6.039	6.134	6.229	6.325	6.420	6.515	6.608	6.705	6.801	6.896	6.983
.420	6.164	6.252	6.356	6.452	6.548	6.644	6.741	6.837	6.931	7.029	7.126
.440	6.289	6.382	6.483	6.580	6.677	6.774	6.871	6.969	7.066	7.163	7.260
.460	6.413	6.513	6.611	6.709	6.807	6.905	7.003	7.101	7.163	7.297	7.395
.480	6.541	6.640	6.739	6.838	6.937	7.001	7.136	7.235	7.334	7.433	7.532
.500	6.670	6.770	6.870	6.970	7.065	7.134	7.269	7.369	7.469	7.569	7.660
.520	6.791	6.900	7.001	7.102	7.203	7.304	7.405	7.506	7.607	7.708	7.808
.540	6.931	7.033	7.135	7.236	7.339	7.441	7.542	7.644	7.707	7.848	7.950
.560	7.065	7.168	7.271	7.374	7.477	7.580	7.682	7.785	7.888	7.971	8.093
.580	7.193	7.306	7.410	7.514	7.618	7.722	7.825	7.929	8.033	8.136	8.235
.600	7.343	7.448	7.552	7.657	7.762	7.867	7.971	8.071	8.181	8.285	8.390
.620	7.487	7.592	7.698	7.804	7.910	8.015	8.121	8.227	8.332	8.438	8.543
.640	7.635	7.742	7.848	7.955	8.062	8.166	8.275	8.382	8.486	8.595	8.701
.660	7.788	7.896	8.003	8.111	8.178	8.327	8.434	8.542	8.639	8.757	8.865
.680	7.946	8.055	8.164	8.232	8.382	8.490	8.599	8.708	8.816	8.925	9.033
.700	8.111	8.221	8.331	8.436	8.551	8.661	8.771	8.880	8.990	9.099	9.209
.720	8.283	8.395	8.506	8.617	8.728	8.795	8.950	9.060	9.171	9.235	9.392
.740	8.464	8.577	8.688	8.801	8.913	9.025	9.137	9.249	9.361	9.473	9.584
.760	8.655	8.769	8.882	8.996	9.064	9.222	9.334	9.449	9.562	9.674	9.787
.780	8.858	8.973	9.088	9.203	9.317	9.432	9.546	9.654	9.774	9.888	10.002
.800	9.075	9.192	9.307	9.424	9.540	9.655	9.771	9.887	10.002	10.117	10.181
.820	9.310	9.427	9.545	9.614	9.780	9.897	10.014	10.131	10.247	10.364	10.481
.840	9.566	9.685	9.804	9.923	10.041	10.160	10.278	10.397	10.462	10.633	10.751
.860	9.848	9.969	10.090	10.210	10.331	10.451	10.571	10.691	10.811	10.930	11.050
.880	10.166	10.289	10.411	10.534	10.656	10.778	10.900	11.021	11.143	11.264	11.384
.900	10.532	10.657	10.778	10.905	11.030	11.154	11.277	11.401	11.524	11.648	11.771
.920	10.966	11.094	11.220	11.347	11.473	11.600	11.726	11.851	11.977	12.103	12.228
.940	11.508	11.638	11.768	11.897	12.026	12.155	12.284	12.413	12.541	12.669	12.797
.950	11.842	11.974	12.105	12.236	12.367	12.498	12.628	12.759	12.889	13.018	13.148
.960	12.243	12.376	12.510	12.643	12.775	12.908	13.040	13.173	13.305	13.436	13.568
.970	12.747	12.883	13.018	13.154	13.289	13.424	13.559	13.693	13.827	13.962	14.095
.980	13.436	13.576	13.715	13.853	13.992	14.130	14.268	14.405	14.543	14.680	14.817
.990	14.571	14.715	14.859	15.003	15.146	15.289	15.432	15.574	15.716	15.858	16.000
.995	15.660	15.809	15.957	16.105	16.253	16.401	16.548	16.695	16.841	16.988	17.134
.999	18.062	18.220	18.378	18.535	18.692	18.849	19.005	19.161	19.316	19.471	19.626

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	8.00	8.10	8.20	8.30	8.40	8.50	8.60	8.70	8.80	8.90	9.00
.001	1.971	2.018	2.065	2.112	2.160	2.208	2.256	2.305	2.354	2.403	2.452
.005	2.571	2.626	2.681	2.737	2.793	2.849	2.905	2.961	3.018	3.075	3.132
.010	2.906	2.965	3.024	3.084	3.144	3.204	3.264	3.325	3.385	3.446	3.507
.020	3.307	3.371	3.435	3.499	3.563	3.627	3.692	3.757	3.822	3.888	3.953
.030	3.581	3.648	3.715	3.782	3.849	3.916	3.984	4.052	4.120	4.188	4.256
.040	3.798	3.867	3.936	4.005	4.074	4.144	4.214	4.284	4.354	4.424	4.494
.050	3.981	4.051	4.122	4.193	4.265	4.336	4.407	4.479	4.551	4.623	4.695
.060	4.141	4.214	4.286	4.359	4.431	4.504	4.577	4.650	4.724	4.797	4.871
.080	4.418	4.493	4.568	4.643	4.718	4.794	4.870	4.945	5.021	5.097	5.173
.100	4.656	4.733	4.810	4.888	4.965	5.043	5.120	5.198	5.276	5.354	5.432
.120	4.868	4.947	5.026	5.106	5.185	5.264	5.344	5.423	5.503	5.583	5.663
.140	5.063	5.143	5.224	5.305	5.379	5.467	5.548	5.629	5.711	5.792	5.874
.160	5.243	5.326	5.408	5.490	5.572	5.655	5.738	5.820	5.903	5.986	6.069
.180	5.414	5.497	5.581	5.665	5.748	5.832	5.916	5.997	6.085	6.169	6.253
.200	5.569	5.661	5.746	5.831	5.916	6.001	6.086	6.172	6.257	6.343	6.428
.220	5.732	5.818	5.904	5.990	6.077	6.163	6.250	6.336	6.407	6.510	6.596
.240	5.882	5.970	6.053	6.141	6.232	6.319	6.407	6.495	6.583	6.670	6.758
.260	6.029	6.117	6.206	6.294	6.383	6.471	6.560	6.649	6.730	6.827	6.916
.280	6.172	6.261	6.351	6.440	6.530	6.616	6.710	6.783	6.889	6.979	7.069
.300	6.312	6.403	6.493	6.584	6.675	6.757	6.856	6.947	7.038	7.129	7.220
.320	6.450	6.542	6.633	6.725	6.817	6.909	7.000	7.092	7.184	7.276	7.368
.340	6.554	6.679	6.772	6.865	6.957	7.050	7.143	7.235	7.328	7.421	7.514
.360	6.722	6.816	6.909	7.003	7.097	7.190	7.284	7.378	7.472	7.565	7.659
.380	6.857	6.952	7.046	7.141	7.199	7.330	7.424	7.519	7.614	7.708	7.803
.400	6.983	7.087	7.182	7.278	7.373	7.469	7.564	7.660	7.755	7.851	7.947
.420	7.126	7.222	7.318	7.415	7.511	7.607	7.704	7.800	7.897	7.993	8.089
.440	7.260	7.357	7.455	7.552	7.649	7.747	7.844	7.941	8.039	8.136	8.233
.460	7.395	7.494	7.592	7.690	7.788	7.886	7.985	8.083	8.181	8.279	8.378
.480	7.532	7.631	7.730	7.828	7.928	8.027	8.126	8.225	8.324	8.423	8.523
.500	7.660	7.769	7.869	7.969	8.059	8.169	8.269	8.327	8.469	8.566	8.666
.520	7.808	7.909	8.010	8.111	8.212	8.313	8.414	8.514	8.615	8.716	8.795
.540	7.950	8.052	8.153	8.245	8.357	8.459	8.539	8.662	8.763	8.865	8.967
.560	8.093	8.196	8.299	8.401	8.483	8.607	8.709	8.812	8.914	9.017	9.120
.580	8.235	8.344	8.447	8.551	8.654	8.758	8.856	8.965	9.068	9.169	9.275
.600	8.390	8.489	8.597	8.703	8.808	8.901	9.014	9.121	9.225	9.283	9.434
.620	8.543	8.649	8.711	8.860	8.920	9.070	9.176	9.280	9.386	9.492	9.597
.640	8.701	8.805	8.914	8.976	9.127	9.210	9.293	9.446	9.504	9.658	9.764
.660	8.865	8.972	9.079	9.186	9.294	9.401	9.508	9.615	9.723	9.830	9.887
.680	9.033	9.096	9.250	9.358	9.467	9.569	9.683	9.791	9.899	9.995	10.115
.700	9.209	9.318	9.428	9.537	9.643	9.756	9.865	9.974	10.081	10.192	10.301
.720	9.392	9.503	9.613	9.723	9.834	9.944	10.054	10.164	10.274	10.378	10.494
.740	9.584	9.696	9.808	9.919	10.030	10.142	10.253	10.351	10.475	10.559	10.697
.760	9.787	9.900	9.987	10.125	10.238	10.350	10.462	10.575	10.687	10.799	10.911
.780	10.002	10.116	10.230	10.344	10.405	10.571	10.684	10.798	10.908	11.024	11.109
.800	10.181	10.348	10.463	10.578	10.693	10.807	10.922	11.036	11.151	11.265	11.380
.820	10.481	10.597	10.714	10.830	10.946	11.062	11.178	11.294	11.410	11.525	11.641
.840	10.751	10.869	10.987	11.104	11.222	11.332	11.457	11.574	11.691	11.808	11.925
.860	11.050	11.169	11.289	11.408	11.527	11.646	11.765	11.883	12.002	12.120	12.239
.880	11.384	11.507	11.627	11.748	11.869	11.990	12.079	12.230	12.351	12.471	12.528
.900	11.771	11.894	12.017	12.140	12.262	12.385	12.507	12.629	12.751	12.873	12.995
.920	12.228	12.353	12.478	12.603	12.728	12.853	12.977	13.101	13.226	13.345	13.473
.940	12.797	12.925	13.053	13.181	13.308	13.435	13.562	13.689	13.816	13.942	14.069
.950	13.148	13.278	13.407	13.536	13.665	13.794	13.922	14.050	14.179	14.307	14.435
.960	13.568	13.699	13.830	13.961	14.092	14.222	14.353	14.483	14.613	14.743	14.873
.970	14.095	14.229	14.362	14.496	14.629	14.761	14.894	15.026	15.159	15.291	15.422
.980	14.817	14.953	15.090	15.226	15.362	15.498	15.633	15.768	15.903	16.038	16.173
.990	16.000	16.141	16.282	16.423	16.564	16.704	16.844	16.984	17.124	17.263	17.403
.995	17.134	17.279	17.425	17.570	17.715	17.859	18.004	18.148	18.291	18.435	18.578
.999	19.626	19.781	19.935	20.088	20.242	20.395	20.548	20.700	20.853	21.004	21.156

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	9.00	9.10	9.20	9.30	9.40	9.50	9.60	9.70	9.80	9.90	10.00
.001	2.452	2.502	2.552	2.602	2.653	2.703	2.754	2.806	2.857	2.909	2.961
.005	3.132	3.190	3.248	3.305	3.364	3.422	3.481	3.539	3.598	3.658	3.717
.010	3.507	3.569	3.630	3.692	3.754	3.816	3.879	3.941	4.004	4.067	4.130
.020	3.953	4.019	4.085	4.151	4.217	4.284	4.350	4.417	4.484	4.551	4.618
.030	4.256	4.324	4.393	4.462	4.531	4.600	4.670	4.739	4.809	4.879	4.949
.040	4.494	4.565	4.636	4.707	4.778	4.849	4.921	4.992	5.064	5.136	5.208
.050	4.695	4.768	4.840	4.913	4.986	5.059	5.132	5.205	5.278	5.352	5.425
.060	4.871	4.945	5.019	5.093	5.167	5.242	5.316	5.391	5.466	5.541	5.616
.080	5.173	5.250	5.326	5.403	5.479	5.556	5.633	5.710	5.787	5.865	5.942
.100	5.432	5.511	5.589	5.668	5.747	5.825	5.904	5.983	6.063	6.142	6.221
.120	5.663	5.743	5.824	5.904	5.984	6.065	6.146	6.226	6.307	6.388	6.469
.140	5.874	5.955	6.037	6.119	6.201	6.283	6.362	6.448	6.530	6.613	6.695
.160	6.069	6.152	6.236	6.319	6.402	6.486	6.569	6.653	6.737	6.821	6.905
.180	6.253	6.338	6.422	6.507	6.592	6.677	6.762	6.847	6.932	7.017	7.102
.200	6.428	6.514	6.600	6.686	6.772	6.858	6.944	7.030	7.116	7.203	7.289
.220	6.596	6.683	6.770	6.857	6.944	7.032	7.119	7.206	7.294	7.381	7.469
.240	6.758	6.846	6.935	7.023	7.111	7.199	7.287	7.376	7.464	7.553	7.641
.260	6.916	7.005	7.094	7.183	7.272	7.357	7.451	7.541	7.629	7.720	7.809
.280	7.069	7.157	7.250	7.340	7.430	7.520	7.610	7.701	7.792	7.882	7.973
.300	7.220	7.311	7.402	7.493	7.585	7.676	7.767	7.859	7.950	8.041	8.133
.320	7.368	7.460	7.552	7.644	7.736	7.829	7.920	8.013	8.106	8.198	8.290
.340	7.514	7.607	7.700	7.793	7.886	7.980	8.073	8.166	8.249	8.352	8.446
.360	7.659	7.753	7.847	7.941	8.035	8.129	8.223	8.317	8.411	8.505	8.600
.380	7.803	7.898	7.993	8.088	8.182	8.277	8.372	8.467	8.562	8.657	8.752
.400	7.947	8.042	8.138	8.234	8.329	8.383	8.478	8.595	8.713	8.809	8.904
.420	8.089	8.186	8.283	8.338	8.471	8.573	8.669	8.766	8.863	8.959	9.056
.440	8.233	8.331	8.386	8.515	8.623	8.721	8.818	8.916	9.013	9.111	9.208
.460	8.378	8.476	8.574	8.672	8.771	8.869	8.967	9.043	9.164	9.262	9.361
.480	8.523	8.619	8.699	8.809	8.919	9.018	9.117	9.214	9.316	9.415	9.514
.500	8.666	8.769	8.869	8.969	9.069	9.169	9.269	9.369	9.468	9.569	9.669
.520	8.795	8.917	9.019	9.119	9.219	9.321	9.422	9.520	9.623	9.724	9.825
.540	8.967	9.069	9.170	9.249	9.374	9.475	9.553	9.679	9.780	9.882	9.934
.560	9.120	9.222	9.325	9.403	9.530	9.632	9.735	9.837	9.940	10.042	10.144
.580	9.275	9.378	9.482	9.561	9.689	9.792	9.895	9.999	10.102	10.205	10.302
.600	9.434	9.538	9.642	9.747	9.851	9.955	10.059	10.163	10.268	10.372	10.476
.620	9.597	9.702	9.801	9.863	10.017	10.122	10.227	10.332	10.437	10.542	10.647
.640	9.764	9.870	9.976	10.082	10.188	10.294	10.400	10.506	10.611	10.717	10.823
.660	9.887	10.044	10.147	10.244	10.364	10.471	10.578	10.685	10.791	10.898	11.005
.680	10.115	10.223	10.331	10.439	10.540	10.653	10.762	10.870	10.977	11.085	11.192
.700	10.301	10.410	10.518	10.627	10.736	10.845	10.953	11.034	11.163	11.279	11.387
.720	10.494	10.602	10.714	10.824	10.926	11.043	11.138	11.262	11.372	11.481	11.590
.740	10.697	10.808	10.919	11.029	11.140	11.251	11.361	11.472	11.582	11.693	11.803
.760	10.911	11.023	11.135	11.246	11.358	11.470	11.582	11.693	11.805	11.916	12.027
.780	11.109	11.251	11.364	11.477	11.589	11.702	11.815	11.912	12.040	12.153	12.265
.800	11.380	11.494	11.608	11.722	11.836	11.943	12.064	12.178	12.292	12.405	12.519
.820	11.641	11.756	11.872	11.987	12.102	12.217	12.332	12.447	12.562	12.677	12.792
.840	11.925	12.042	12.159	12.275	12.392	12.508	12.625	12.741	12.857	12.973	13.089
.860	12.239	12.357	12.475	12.593	12.711	12.765	12.947	13.065	13.182	13.300	13.417
.880	12.528	12.711	12.830	12.950	13.070	13.189	13.308	13.427	13.547	13.666	13.785
.900	12.995	13.116	13.204	13.359	13.481	13.602	13.723	13.844	13.965	14.085	14.206
.920	13.473	13.597	13.721	13.844	13.967	14.091	14.214	14.337	14.460	14.582	14.705
.940	14.069	14.195	14.321	14.447	14.573	14.698	14.824	14.949	15.074	15.199	15.324
.950	14.435	14.562	14.690	14.817	14.945	15.072	15.179	15.326	15.452	15.579	15.705
.960	14.873	15.002	15.131	15.260	15.390	15.518	15.647	15.776	15.904	16.032	16.160
.970	15.422	15.554	15.685	15.817	15.948	16.079	16.210	16.340	16.471	16.601	16.731
.980	16.173	16.308	16.442	16.576	16.710	16.844	16.977	17.111	17.244	17.377	17.510
.990	17.403	17.542	17.680	17.819	17.957	18.095	18.233	18.371	18.509	18.646	18.783
.995	18.578	18.721	18.864	19.007	19.149	19.291	19.433	19.575	19.716	19.857	19.998
.999	21.156	21.308	21.458	21.609	21.760	21.910	22.060	22.210	22.359	22.508	22.657

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	10.00	10.50	11.00	11.50	12.00	12.50	13.00	13.50	14.00	14.50	15.00
.001	2.961	3.223	3.492	3.765	4.042	4.325	4.611	4.901	5.195	5.493	5.794
.005	3.717	4.017	4.321	4.630	4.943	5.260	5.580	5.904	6.231	6.561	6.893
.010	4.130	4.449	4.771	5.098	5.428	5.762	6.099	6.439	6.782	7.128	7.477
.020	4.618	4.957	5.300	5.646	5.996	6.349	6.704	7.063	7.424	7.787	8.153
.030	4.949	5.301	5.656	6.015	6.377	6.742	7.110	7.480	7.852	8.227	8.604
.040	5.208	5.570	5.935	6.304	6.675	7.049	7.425	7.804	8.186	8.569	8.954
.050	5.425	5.796	6.169	6.545	6.924	7.306	7.690	8.076	8.464	8.854	9.246
.060	5.616	5.993	6.373	6.756	7.141	7.529	7.919	8.312	8.706	9.102	9.500
.080	5.942	6.331	6.723	7.117	7.513	7.911	8.312	8.715	9.119	9.525	9.933
.100	6.221	6.620	7.021	7.424	7.829	8.237	8.646	9.057	9.470	9.884	10.300
.120	6.469	6.876	7.285	7.696	8.110	8.525	8.941	9.360	9.780	10.201	10.624
.140	6.695	7.110	7.526	7.944	8.364	8.786	9.210	9.634	10.061	10.488	10.917
.160	6.905	7.326	7.710	8.174	8.599	9.028	9.457	9.888	10.320	10.754	11.188
.180	7.102	7.529	7.958	8.389	8.821	9.252	9.690	10.126	10.564	11.002	11.442
.200	7.289	7.722	8.157	8.593	9.031	9.470	9.910	10.351	10.794	11.238	11.682
.220	7.469	7.907	8.347	8.789	9.231	9.651	10.121	10.567	10.987	11.462	11.911
.240	7.641	8.084	8.530	8.977	9.424	9.873	10.322	10.774	11.225	11.678	12.131
.260	7.809	8.258	8.708	9.159	9.611	10.065	10.519	10.974	11.430	11.887	12.343
.280	7.973	8.426	8.881	9.337	9.787	10.200	10.710	11.169	11.626	12.090	12.552
.300	8.133	8.591	9.028	9.511	9.959	10.434	10.896	11.360	11.824	12.288	12.754
.320	8.290	8.731	9.217	9.680	10.146	10.612	11.079	11.547	12.015	12.483	12.948
.340	8.446	8.910	9.381	9.849	10.293	10.789	11.259	11.731	12.202	12.675	13.147
.360	8.600	9.071	9.543	10.016	10.489	10.963	11.438	11.913	12.387	12.864	13.332
.380	8.752	9.227	9.703	10.181	10.655	11.136	11.611	12.093	12.572	13.019	13.531
.400	8.904	9.384	9.864	10.345	10.826	11.308	11.790	12.272	12.755	13.238	13.721
.420	9.056	9.540	10.024	10.509	10.994	11.479	11.965	12.451	12.937	13.423	13.910
.440	9.208	9.696	10.184	10.673	11.134	11.621	12.139	12.629	13.119	13.608	14.098
.460	9.361	9.853	10.345	10.837	11.329	11.822	12.311	12.808	13.234	13.794	14.252
.480	9.514	10.010	10.506	11.002	11.498	11.995	12.491	12.987	13.475	13.911	14.477
.500	9.669	10.143	10.669	11.168	11.668	12.107	12.668	13.164	13.668	14.168	14.667
.520	9.825	10.327	10.833	11.333	11.840	12.344	12.839	13.342	13.854	14.357	14.861
.540	9.934	10.491	10.999	11.507	12.014	12.505	13.028	13.531	14.042	14.549	15.054
.560	10.144	10.656	11.168	11.650	12.190	12.701	13.212	13.721	14.233	14.743	15.252
.580	10.302	10.823	11.311	11.855	12.370	12.885	13.399	13.912	14.427	14.940	15.453
.600	10.476	10.996	11.515	12.034	12.553	13.071	13.589	14.105	14.624	15.139	15.658
.620	10.647	11.164	11.694	12.217	12.741	13.263	13.784	14.287	14.752	15.347	15.862
.640	10.823	11.352	11.879	12.406	12.929	13.459	13.967	14.509	15.034	15.558	16.081
.660	11.005	11.537	12.069	12.538	13.129	13.661	14.190	14.719	15.245	15.775	16.302
.680	11.192	11.730	12.266	12.797	13.336	13.870	14.403	14.935	15.466	15.999	16.529
.700	11.387	11.929	12.470	13.005	13.547	14.086	14.623	15.160	15.695	16.231	16.765
.720	11.590	12.135	12.682	13.226	13.769	14.311	14.853	15.393	15.933	16.472	17.000
.740	11.803	12.354	12.904	13.453	14.000	14.547	15.093	15.637	16.181	16.725	17.267
.760	12.027	12.575	13.138	13.674	14.244	14.795	15.345	15.893	16.443	16.990	17.536
.780	12.265	12.826	13.386	13.945	14.502	15.058	15.612	16.165	16.719	17.270	17.821
.800	12.519	13.086	13.651	14.214	14.777	15.337	15.897	16.456	17.013	17.570	18.125
.820	12.792	13.365	13.935	14.505	15.072	15.637	16.204	16.767	17.285	17.891	18.451
.840	13.089	13.668	14.245	14.820	15.394	15.886	16.536	17.105	17.673	18.240	18.805
.860	13.417	14.003	14.586	15.168	15.748	16.326	16.903	17.478	18.051	18.624	19.195
.880	13.785	14.378	14.969	15.557	16.144	16.729	17.312	17.894	18.473	19.053	19.630
.900	14.206	14.808	15.407	16.003	16.555	17.191	17.782	18.371	18.958	19.518	20.128
.920	14.705	15.316	15.925	16.531	17.135	17.730	18.336	18.933	19.529	20.123	20.715
.940	15.324	15.947	16.567	17.185	17.799	18.412	19.022	19.628	20.235	20.839	21.442
.950	15.705	16.335	16.962	17.586	18.208	18.826	19.442	20.057	20.669	21.278	21.886
.960	16.160	16.799	17.434	18.066	18.695	19.321	19.945	20.566	21.185	21.802	22.417
.970	16.731	17.380	18.025	18.666	19.305	19.940	20.573	21.203	21.831	22.457	23.080
.980	17.510	18.172	18.830	19.484	20.135	20.783	21.428	22.070	22.709	23.346	23.981
.990	18.783	19.466	20.145	20.819	21.490	22.157	22.821	23.481	24.139	24.794	25.446
.995	19.998	20.701	21.398	22.091	22.779	23.464	24.145	24.822	25.497	26.168	26.836
.999	22.657	23.398	24.134	24.864	25.589	26.310	27.026	27.738	28.446	29.150	29.851

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	15.00	15.50	16.00	16.50	17.00	17.50	18.00	18.50	19.00	19.50	20.00
.001	5.794	6.098	6.405	6.715	7.028	7.344	7.662	7.983	8.306	8.631	8.958
.005	6.893	7.229	7.567	7.908	8.251	8.596	8.943	9.293	9.644	9.998	10.353
.010	7.477	7.828	8.181	8.537	8.895	9.254	9.616	9.980	10.346	10.713	11.082
.020	8.153	8.521	8.891	9.264	9.638	10.014	10.391	10.771	11.152	11.535	11.919
.030	8.604	8.983	9.364	9.747	10.131	10.517	10.905	11.295	11.686	12.078	12.472
.040	8.954	9.341	9.730	10.121	10.514	10.908	11.303	11.700	12.099	12.498	12.899
.050	9.246	9.640	10.036	10.433	10.832	11.233	11.634	12.037	12.442	12.848	13.255
.060	9.500	9.900	10.301	10.704	11.108	11.514	11.921	12.330	12.739	13.150	13.562
.080	9.933	10.342	10.753	11.165	11.578	11.993	12.409	12.826	13.244	13.662	14.084
.100	10.300	10.717	11.135	11.555	11.976	12.398	12.822	13.244	13.663	14.098	14.525
.120	10.624	11.048	11.473	11.899	12.326	12.755	13.185	13.616	14.047	14.480	14.913
.140	10.917	11.347	11.778	12.211	12.644	13.079	13.513	13.950	14.387	14.825	15.264
.160	11.188	11.624	12.060	12.498	12.937	13.376	13.816	14.258	14.700	15.143	15.587
.180	11.442	11.883	12.323	12.767	13.210	13.621	14.100	14.546	14.992	15.440	15.888
.200	11.682	12.128	12.574	13.021	13.436	13.918	14.367	14.818	15.259	15.682	16.172
.220	11.911	12.361	12.812	13.263	13.716	14.169	14.614	15.077	15.529	15.987	16.443
.240	12.131	12.586	13.025	13.496	13.944	14.410	14.867	15.325	15.784	16.244	16.693
.260	12.343	12.803	13.262	13.687	14.177	14.642	15.104	15.556	16.028	16.491	16.955
.280	12.552	13.013	13.409	13.940	14.404	14.869	15.334	15.799	16.265	16.731	17.193
.300	12.754	13.216	13.686	14.153	14.621	15.080	15.558	16.022	16.495	16.961	17.436
.320	12.948	13.418	13.892	14.363	14.834	15.305	15.767	16.244	16.717	17.195	17.669
.340	13.147	13.621	14.094	14.568	15.043	15.518	15.993	16.469	16.944	17.418	17.897
.360	13.332	13.816	14.294	14.771	15.249	15.727	16.206	16.685	17.163	17.643	18.123
.380	13.531	14.011	14.490	14.973	15.454	15.934	16.417	16.899	17.380	17.841	18.346
.400	13.721	14.204	14.687	15.134	15.657	16.141	16.626	17.100	17.595	18.079	18.567
.420	13.910	14.397	14.884	15.371	15.858	16.341	16.831	17.322	17.810	18.299	18.787
.440	14.098	14.589	15.079	15.569	16.059	16.551	17.040	17.533	18.018	18.515	19.007
.460	14.252	14.781	15.274	15.768	16.262	16.756	17.250	17.744	18.238	18.731	19.226
.480	14.477	14.899	15.471	15.967	16.464	16.961	17.457	17.955	18.452	18.949	19.443
.500	14.667	15.158	15.668	16.168	16.668	17.168	17.623	18.166	18.668	19.168	19.667
.520	14.861	15.325	15.827	16.370	16.873	17.376	17.878	18.376	18.885	19.386	19.891
.540	15.054	15.562	16.058	16.574	17.080	17.581	18.093	18.599	19.104	19.604	20.116
.560	15.252	15.761	16.271	16.781	17.291	17.794	18.306	18.812	19.325	19.785	20.344
.580	15.453	15.966	16.479	16.949	17.499	18.017	18.523	19.041	19.552	20.064	20.575
.600	15.658	16.169	16.690	17.206	17.722	18.191	18.752	19.267	19.782	20.195	20.798
.620	15.862	16.387	16.906	17.425	17.944	18.463	18.981	19.499	20.017	20.534	21.048
.640	16.081	16.604	17.106	17.627	18.081	18.694	19.215	19.736	20.257	20.777	21.244
.660	16.302	16.807	17.353	17.881	18.406	18.931	19.456	19.977	20.504	21.028	21.551
.680	16.529	17.057	17.567	18.119	18.648	19.176	19.704	20.228	20.759	21.286	21.811
.700	16.765	17.299	17.832	18.319	18.898	19.423	19.861	20.492	21.009	21.553	22.082
.720	17.000	17.548	18.085	18.622	19.158	19.693	20.228	20.763	21.297	21.830	22.363
.740	17.267	17.809	18.350	18.890	19.423	19.965	20.507	21.044	21.583	22.118	22.656
.760	17.536	18.082	18.627	19.171	19.715	20.206	20.800	21.342	21.883	22.416	22.960
.780	17.821	18.371	18.920	19.444	20.013	20.537	21.110	21.655	22.172	22.716	23.289
.800	18.125	18.679	19.233	19.783	20.338	20.889	21.439	21.933	22.538	23.086	23.634
.820	18.451	18.962	19.569	20.126	20.683	21.238	21.793	22.347	22.893	23.453	24.005
.840	18.805	19.368	19.933	20.489	21.057	21.614	22.177	22.728	23.293	23.850	24.407
.860	19.195	19.764	20.333	20.901	21.468	22.033	22.591	23.161	23.606	24.287	24.840
.880	19.630	20.206	20.781	21.327	21.927	22.497	23.069	23.634	24.206	24.774	25.341
.900	20.128	20.711	21.292	21.873	22.452	23.029	23.606	24.182	24.756	25.330	25.903
.920	20.715	21.306	21.895	22.479	23.070	23.655	24.118	24.822	25.399	25.984	26.564
.940	21.442	22.042	22.641	23.238	23.834	24.428	25.021	25.613	26.203	26.792	27.380
.950	21.886	22.493	23.097	23.700	24.301	24.901	25.497	26.096	26.692	27.286	27.879
.960	22.417	23.030	23.641	24.250	24.858	25.464	26.069	26.672	27.273	27.874	28.473
.970	23.080	23.701	24.320	24.938	25.554	26.168	26.780	27.391	28.000	28.608	29.214
.980	23.981	24.613	25.243	25.871	26.498	27.122	27.744	28.365	28.984	29.592	30.218
.990	25.446	26.096	26.743	27.388	28.030	28.671	29.310	29.946	30.581	31.214	31.845
.995	26.836	27.501	28.164	28.824	29.482	30.137	30.791	31.442	32.091	32.738	33.383
.999	29.851	30.549	31.243	31.935	32.623	33.309	33.992	34.673	35.351	36.027	36.701

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	20.00	20.50	21.00	21.50	22.00	22.50	23.00	23.50	24.00	24.50	25.00
.001	8.958	9.288	9.619	9.953	10.288	10.625	10.964	11.305	11.647	11.991	12.337
.005	10.353	10.710	11.069	11.430	11.792	12.156	12.521	12.887	13.255	13.625	13.995
.010	11.082	11.453	11.825	12.199	12.574	12.951	13.329	13.708	14.089	14.470	14.853
.020	11.919	12.304	12.691	13.080	13.469	13.860	14.252	14.646	15.040	15.435	15.832
.030	12.472	12.867	13.263	13.661	14.060	14.460	14.861	15.263	15.666	16.070	16.475
.040	12.899	13.302	13.705	14.110	14.516	14.922	15.330	15.739	16.149	16.560	16.971
.050	13.255	13.663	14.072	14.482	14.894	15.306	15.719	16.134	16.549	16.965	17.382
.060	13.562	13.975	14.390	14.805	15.221	15.638	16.056	16.475	16.895	17.316	17.737
.080	14.084	14.506	14.928	15.351	15.776	16.201	16.627	17.053	17.480	17.904	18.338
.100	14.525	14.954	15.383	15.794	16.244	16.674	17.108	17.541	17.975	18.409	18.844
.120	14.913	15.347	15.782	16.218	16.655	17.092	17.529	17.969	18.408	18.848	19.289
.140	15.264	15.703	16.143	16.584	17.005	17.468	17.911	18.310	18.799	19.244	19.689
.160	15.587	16.031	16.476	16.921	17.365	17.815	18.262	18.617	19.159	19.605	20.058
.180	15.888	16.337	16.786	17.236	17.686	18.138	18.496	19.041	19.494	19.947	20.401
.200	16.172	16.625	17.074	17.532	17.987	18.442	18.898	19.354	19.810	20.267	20.725
.220	16.443	16.900	17.347	17.815	18.273	18.732	19.191	19.651	20.111	20.572	21.032
.240	16.693	17.164	17.625	18.086	18.548	19.010	19.473	19.936	20.399	20.860	21.328
.260	16.955	17.419	17.883	18.348	18.813	19.273	19.744	20.208	20.678	21.143	21.612
.280	17.193	17.666	18.133	18.601	19.070	19.538	19.983	20.477	20.843	21.418	21.881
.300	17.436	17.906	18.377	18.849	19.317	19.791	20.265	20.737	21.210	21.682	22.157
.320	17.669	18.142	18.616	19.091	19.565	20.040	20.490	20.978	21.454	21.889	22.419
.340	17.897	18.368	18.851	19.329	19.806	20.183	20.711	21.135	21.719	22.198	22.676
.360	18.123	18.602	19.080	19.563	20.044	20.524	21.005	21.487	21.858	22.450	22.928
.380	18.346	18.829	19.312	19.770	20.277	20.710	21.246	21.723	22.214	22.695	23.179
.400	18.567	19.050	19.539	20.012	20.511	20.997	21.484	21.971	22.458	22.945	23.432
.420	18.787	19.276	19.765	20.247	20.736	21.232	21.719	22.209	22.700	23.161	23.679
.440	19.007	19.497	19.990	20.475	20.973	21.462	21.957	22.421	22.941	23.432	23.926
.460	19.226	19.721	20.215	20.703	21.204	21.699	22.193	22.684	23.183	23.678	24.173
.480	19.443	19.942	20.439	20.938	21.435	21.933	22.423	22.913	23.424	23.922	24.389
.500	19.667	20.167	20.616	21.168	21.668	22.154	22.554	23.167	23.660	24.047	24.664
.520	19.891	20.342	20.896	21.399	21.902	22.397	22.905	23.409	23.912	24.413	24.901
.540	20.116	20.621	21.114	21.632	22.138	22.643	23.148	23.654	24.155	24.662	25.169
.560	20.344	20.839	21.361	21.814	22.377	22.885	23.393	23.893	24.408	24.916	25.424
.580	20.575	21.086	21.598	22.107	22.620	23.130	23.641	24.136	24.662	25.172	25.618
.600	20.798	21.325	21.839	22.353	22.838	23.373	23.894	24.407	24.920	25.433	25.946
.620	21.048	21.569	22.086	22.602	23.119	23.635	24.151	24.663	25.183	25.699	26.214
.640	21.244	21.818	22.335	22.854	23.375	23.896	24.415	24.933	25.444	25.971	26.489
.660	21.551	22.071	22.597	23.119	23.642	24.156	24.686	25.207	25.725	26.250	26.770
.680	21.811	22.339	22.864	23.360	23.915	24.409	24.965	25.362	26.014	26.537	27.027
.700	22.082	22.612	23.141	23.669	24.198	24.710	25.252	25.773	26.274	26.835	27.361
.720	22.363	22.896	23.428	23.944	24.487	25.021	25.553	26.084	26.614	27.008	27.638
.740	22.656	23.192	23.724	24.263	24.798	25.332	25.865	26.400	26.933	27.466	27.998
.760	22.960	23.488	24.042	24.581	25.119	25.655	26.194	26.727	27.268	27.803	28.340
.780	23.289	23.832	24.374	24.917	25.459	26.000	26.541	27.063	27.621	28.088	28.699
.800	23.634	24.181	24.728	25.241	25.753	26.364	26.909	27.453	27.996	28.530	29.082
.820	24.005	24.554	25.107	25.657	26.206	26.754	27.303	27.851	28.399	28.908	29.492
.840	24.407	24.962	25.518	26.072	26.625	27.170	27.731	28.283	28.834	29.385	29.933
.860	24.840	25.408	25.838	26.527	27.086	27.643	28.200	28.757	29.313	29.868	30.422
.880	25.341	25.906	26.471	27.036	27.581	28.162	28.723	29.285	29.846	30.254	30.965
.900	25.903	26.474	27.045	27.615	28.184	28.678	29.320	29.887	30.301	31.019	31.584
.920	26.564	27.143	27.720	28.297	28.873	29.448	30.022	30.595	31.165	31.739	32.310
.940	27.380	27.967	28.553	29.138	29.722	30.305	30.884	31.468	32.048	32.627	33.206
.950	27.879	28.471	29.062	29.652	30.240	30.748	31.415	32.001	32.585	33.169	33.752
.960	28.473	29.071	29.667	30.263	30.857	31.450	32.043	32.634	33.224	33.814	34.402
.970	29.214	29.816	30.423	31.025	31.627	32.227	32.826	33.422	34.021	34.617	35.211
.980	30.218	30.833	31.446	32.058	32.668	33.278	33.716	34.493	35.098	35.703	36.307
.990	31.845	32.475	33.103	33.730	34.355	34.978	35.601	36.222	36.841	37.460	38.077
.995	33.383	34.026	34.668	35.308	35.946	36.583	37.218	37.852	38.484	39.115	39.745
.999	36.701	37.372	38.042	38.709	39.375	40.038	40.700	41.360	42.018	42.675	43.330

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	25.00	25.50	26.00	26.50	27.00	27.50	28.00	28.50	29.00	29.50	30.00
.001	12.337	12.684	13.033	13.383	13.734	14.087	14.441	14.796	15.152	15.510	15.869
.005	13.995	14.367	14.741	15.115	15.491	15.867	16.245	16.624	17.004	17.385	17.767
.010	14.853	15.238	15.623	16.009	16.397	16.785	17.175	17.565	17.957	18.349	18.742
.020	15.832	16.230	16.628	17.028	17.428	17.830	18.232	18.635	19.039	19.444	19.850
.030	16.475	16.882	17.289	17.697	18.105	18.515	18.925	19.337	19.749	20.162	20.575
.040	16.971	17.384	17.796	18.212	18.627	19.042	19.459	19.876	20.295	20.713	21.133
.050	17.382	17.800	18.219	18.638	18.963	19.479	19.901	20.323	20.746	21.170	21.594
.060	17.737	18.159	18.582	19.006	19.334	19.856	20.258	20.708	21.136	21.562	21.992
.080	18.338	18.768	19.198	19.629	20.061	20.493	20.926	21.360	21.794	22.229	22.664
.100	18.844	19.257	19.717	20.053	20.592	21.030	21.469	21.895	22.348	22.788	23.229
.120	19.289	19.730	20.172	20.614	21.057	21.500	21.944	22.277	22.806	23.279	23.725
.140	19.689	20.135	20.582	21.028	21.476	21.924	22.372	22.821	23.267	23.720	24.171
.160	20.058	20.508	20.958	21.410	21.861	22.313	22.766	23.219	23.672	24.122	24.580
.180	20.401	20.855	21.309	21.765	22.220	22.676	23.125	23.589	24.044	24.503	24.961
.200	20.725	21.176	21.641	22.099	22.446	23.018	23.478	23.938	24.398	24.859	25.320
.220	21.032	21.494	21.929	22.418	22.880	23.343	23.806	24.269	24.733	25.197	25.662
.240	21.328	21.766	22.257	22.722	23.188	23.654	24.120	24.587	25.046	25.513	25.988
.260	21.612	22.025	22.548	22.988	23.485	23.954	24.423	24.893	25.363	25.832	26.295
.280	21.888	22.359	22.826	23.301	23.773	24.245	24.717	25.063	25.533	26.135	26.608
.300	22.157	22.517	23.103	23.579	24.053	24.528	25.003	25.478	25.953	26.429	26.905
.320	22.419	22.882	23.372	23.850	24.327	24.804	25.282	25.759	26.238	26.716	27.190
.340	22.677	23.157	23.622	24.116	24.596	25.076	25.541	26.029	26.516	26.998	27.479
.360	22.917	23.414	23.896	24.377	24.861	25.343	25.826	26.309	26.726	27.267	27.757
.380	23.176	23.667	24.152	24.637	24.997	25.607	26.093	26.579	27.064	27.550	28.036
.400	23.432	23.860	24.406	24.894	25.382	25.870	26.357	26.845	27.333	27.822	28.309
.420	23.679	24.154	24.657	25.141	25.639	26.130	26.620	27.043	27.600	28.092	28.582
.440	23.922	24.388	24.880	25.372	25.896	26.389	26.882	27.340	27.867	28.360	28.853
.460	24.171	24.668	25.163	25.656	26.152	26.648	27.141	27.638	28.116	28.629	29.124
.480	24.419	24.901	25.399	25.904	26.410	26.906	27.405	27.832	28.364	28.898	29.394
.500	24.667	25.167	25.667	26.151	26.666	27.167	27.633	28.167	28.649	29.167	29.630
.520	24.793	25.356	25.914	26.425	26.923	27.429	27.931	28.434	28.936	29.439	29.791
.540	25.169	25.673	26.179	26.684	27.188	27.694	28.181	28.703	29.208	29.638	30.217
.560	25.423	25.932	26.439	26.946	27.450	27.957	28.432	28.975	29.478	29.990	30.496
.580	25.683	26.062	26.702	27.204	27.723	28.232	28.742	29.251	29.760	30.270	30.760
.600	25.944	26.458	26.969	27.475	27.996	28.508	29.020	29.532	30.042	30.403	31.067
.620	26.214	26.729	27.108	27.760	28.133	28.789	29.304	29.818	30.333	30.846	31.361
.640	26.488	27.006	27.525	28.042	28.560	29.072	29.592	30.111	30.627	31.105	31.661
.660	26.771	27.287	27.812	28.332	28.850	29.372	29.892	30.411	30.931	31.450	31.969
.680	27.061	27.549	28.103	28.628	29.152	29.676	30.198	30.721	31.242	31.754	32.285
.700	27.361	27.888	28.414	28.930	29.318	29.981	30.515	31.040	31.565	32.088	32.613
.720	27.603	28.202	28.731	29.255	29.783	30.277	30.844	31.372	31.899	32.426	32.932
.740	27.962	28.531	29.060	29.594	30.125	30.656	31.167	31.716	32.087	32.778	33.307
.760	28.340	28.875	29.410	29.940	30.478	30.934	31.547	32.080	32.613	33.146	33.677
.780	28.699	29.238	29.776	30.314	30.832	31.389	31.923	32.457	32.999	33.535	34.067
.800	29.082	29.624	30.166	30.707	31.243	31.778	32.329	32.847	33.408	33.947	34.486
.820	29.492	30.038	30.583	31.128	31.673	32.217	32.760	33.293	33.845	34.389	34.931
.840	29.936	30.485	31.035	31.584	32.131	32.680	33.227	33.774	34.321	34.867	35.413
.860	30.422	30.977	31.530	32.083	32.636	33.188	33.739	34.290	34.841	35.388	35.938
.880	30.924	31.524	32.082	32.640	33.197	33.754	34.310	34.865	35.414	35.975	36.529
.900	31.573	32.148	32.711	33.230	33.836	34.398	34.959	35.517	36.080	36.639	37.199
.920	32.310	32.880	33.450	34.019	34.586	35.155	35.710	36.289	36.854	37.420	37.984
.940	33.206	33.784	34.361	34.937	35.511	36.086	36.661	37.222	37.807	38.380	38.950
.950	33.752	34.335	34.916	35.497	36.077	36.656	37.234	37.812	38.389	38.965	39.541
.960	34.390	34.989	35.576	36.162	36.747	37.331	37.915	38.496	39.079	39.660	40.241
.970	35.211	35.805	36.399	36.991	37.582	38.172	38.761	39.351	39.939	40.526	41.111
.980	36.307	36.909	37.511	38.111	38.711	39.310	39.907	40.504	41.100	41.696	42.290
.990	38.077	38.693	39.308	39.922	40.534	41.146	41.757	42.366	42.975	43.583	44.190
.995	39.745	40.373	41.000	41.626	42.251	42.874	43.497	44.118	44.738	45.358	45.976
.999	43.330	43.984	44.636	45.287	45.936	46.584	47.230	47.875	48.519	49.162	49.803

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	30.00	31.00	32.00	33.00	34.00	35.00	36.00	37.00	38.00	39.00	40.00
.001	15.869	16.591	17.316	18.046	18.780	19.518	20.260	21.005	21.753	22.505	23.260
.005	17.767	18.534	19.305	20.079	20.857	21.638	22.422	23.208	23.998	24.791	25.586
.010	18.742	19.532	20.324	21.120	21.919	22.721	23.526	24.333	25.143	25.955	26.770
.020	19.850	20.663	21.480	22.300	23.122	23.947	24.774	25.604	26.436	27.270	28.106
.030	20.575	21.404	22.236	23.071	23.908	24.748	25.589	26.433	27.279	28.128	28.978
.040	21.133	21.974	22.817	23.663	24.512	25.362	26.215	27.070	27.926	28.785	29.645
.050	21.594	22.445	23.297	24.153	25.010	25.870	26.731	27.595	28.460	29.327	30.187
.060	21.992	22.851	23.712	24.574	25.440	26.303	27.176	28.047	28.918	29.794	30.670
.080	22.664	23.536	24.411	25.287	26.165	27.045	27.927	28.806	29.695	30.508	31.451
.100	23.229	24.113	24.998	25.881	26.774	27.664	28.556	29.450	30.345	31.241	32.101
.120	23.723	24.618	25.513	26.409	27.307	28.207	29.108	30.010	30.913	31.659	32.705
.140	24.171	25.072	25.975	26.848	27.786	28.694	29.603	30.513	31.425	32.336	33.250
.160	24.580	25.427	26.400	27.312	28.226	29.141	30.057	30.975	31.855	32.813	33.728
.180	24.961	25.878	26.796	27.715	28.636	29.557	30.480	31.247	32.329	33.255	34.181
.200	25.320	26.236	27.168	28.094	29.003	29.949	30.877	31.769	32.739	33.671	34.603
.220	25.662	26.591	27.521	28.454	29.387	30.302	31.256	32.191	33.127	34.065	35.003
.240	25.988	26.924	27.844	28.798	29.737	30.601	31.617	32.558	33.499	34.443	35.386
.260	26.303	27.244	28.187	29.130	30.074	31.019	31.965	32.911	33.858	34.805	35.755
.280	26.607	27.555	28.432	29.451	30.400	31.346	32.301	33.248	34.205	35.158	36.111
.300	26.905	27.823	28.810	29.764	30.718	31.673	32.629	33.585	34.539	35.499	36.457
.320	27.195	28.152	29.110	30.069	31.023	31.988	32.949	33.910	34.871	35.833	36.796
.340	27.479	28.442	29.405	30.216	31.330	32.297	33.262	34.228	35.194	36.160	37.105
.360	27.690	28.727	29.694	30.658	31.632	32.601	33.560	34.541	35.511	36.471	37.453
.380	28.027	29.008	29.962	30.954	31.888	32.901	33.873	34.807	35.825	36.754	37.775
.400	28.309	29.278	30.259	31.242	32.220	33.198	34.177	35.156	36.045	37.109	37.999
.420	28.582	29.490	30.545	31.528	32.511	33.493	34.471	35.459	36.443	37.426	38.314
.440	28.835	29.840	30.788	31.654	32.759	33.787	34.774	35.761	36.749	37.736	38.725
.460	29.124	30.115	31.106	32.087	33.006	34.080	35.071	36.063	37.055	38.046	39.038
.480	29.395	30.391	31.384	32.382	33.376	34.362	35.347	36.362	37.360	38.332	39.156
.500	29.593	30.667	31.665	32.665	33.667	34.656	35.578	36.656	37.664	38.666	39.667
.520	29.941	30.946	31.950	32.955	33.948	34.963	35.877	36.971	37.880	38.980	39.984
.540	30.215	31.226	32.215	33.244	34.253	35.256	36.270	37.278	38.285	39.295	40.303
.560	30.496	31.510	32.524	33.532	34.550	35.473	36.576	37.541	38.601	39.613	40.622
.580	30.780	31.798	32.815	33.791	34.829	35.867	36.886	37.902	38.919	39.736	40.848
.600	31.067	32.090	33.113	34.049	35.158	36.176	37.201	38.216	39.236	40.161	41.283
.620	31.361	32.389	33.415	34.437	35.470	36.495	37.520	38.547	39.572	40.595	41.621
.640	31.621	32.688	33.726	34.757	35.610	36.819	37.801	38.854	39.907	40.885	41.966
.660	31.969	32.964	34.043	35.080	36.104	37.150	38.185	39.217	40.247	41.287	42.293
.680	32.285	33.328	34.370	35.411	36.405	37.480	38.532	39.570	40.609	41.646	42.629
.700	32.613	33.661	34.663	35.754	36.800	37.845	38.889	39.920	40.949	42.018	43.004
.720	32.953	33.962	35.058	36.109	37.160	38.198	39.259	40.308	41.356	42.402	43.232
.740	33.302	34.366	35.424	36.480	37.536	38.590	39.645	40.699	41.752	42.804	43.855
.760	33.679	34.740	35.715	36.869	37.930	38.990	40.050	41.109	42.167	43.224	44.280
.780	34.070	35.141	36.207	37.278	38.345	39.214	40.476	41.537	42.604	43.666	44.728
.800	34.463	35.563	36.637	37.712	38.785	39.857	40.927	41.998	43.067	44.128	45.199
.820	34.908	36.014	37.097	38.177	39.250	40.322	41.412	42.485	43.563	44.608	45.711
.840	35.413	36.504	37.592	38.680	39.767	40.851	41.936	43.018	44.100	45.180	46.260
.860	35.941	37.027	38.135	39.231	40.325	41.417	42.508	43.598	44.628	45.774	46.857
.880	36.529	37.636	38.735	39.838	40.946	42.044	43.146	44.240	45.222	46.435	47.513
.900	37.149	38.315	39.429	40.543	41.654	42.764	43.757	44.978	46.079	47.187	48.289
.920	37.981	39.109	40.238	41.362	42.483	43.604	44.722	45.839	46.922	48.068	49.171
.940	38.951	40.093	41.232	42.369	43.504	44.637	45.752	46.662	47.991	49.145	50.273
.950	39.541	40.691	41.823	42.982	44.125	45.266	46.402	47.541	48.673	49.808	50.940
.960	40.241	41.400	42.555	43.711	44.861	46.012	47.159	48.288	49.448	50.590	51.729
.970	41.113	42.283	43.452	44.617	45.780	46.941	48.099	49.255	50.157	51.561	52.711
.980	42.290	43.476	44.660	45.824	47.019	48.194	49.367	50.537	51.705	52.871	54.035
.990	44.190	45.401	46.608	47.813	49.014	50.213	51.408	52.601	53.791	54.979	56.164
.995	45.976	47.209	48.439	49.665	50.888	52.107	53.324	54.537	55.748	56.955	58.161
.999	49.803	51.083	52.358	53.629	54.896	56.158	57.417	58.673	59.925	61.174	62.420

Percentage Points of the Gamma Distribution with Unit Scale Parameter

Cum. Prob.	Shape Parameter										
	40.00	41.00	42.00	43.00	44.00	45.00	46.00	47.00	48.00	49.00	50.00
.001	23.260	24.018	24.779	25.542	26.309	27.078	27.849	28.623	29.400	30.178	30.959
.005	25.586	26.384	27.184	27.986	28.791	29.598	30.407	31.218	32.032	32.847	33.664
.010	26.770	27.587	28.407	29.228	30.052	30.877	31.705	32.534	33.365	34.198	35.032
.020	28.106	28.945	29.785	30.627	31.471	32.317	33.165	34.014	34.865	35.717	36.571
.030	28.978	29.830	30.683	31.539	32.396	33.255	34.115	34.977	35.840	36.705	37.571
.040	29.645	30.507	31.371	32.227	33.103	33.972	34.842	35.713	36.586	37.460	38.144
.050	30.187	31.066	31.938	32.812	33.687	34.561	35.441	36.278	37.200	38.082	38.965
.060	30.670	31.547	32.426	33.307	34.188	35.072	35.956	36.842	37.726	38.617	39.495
.080	31.451	32.358	33.083	34.141	35.033	35.928	36.824	37.720	38.618	39.511	40.417
.100	32.101	33.037	33.856	34.839	35.741	36.643	37.550	38.456	39.363	40.174	41.179
.120	32.705	33.612	34.538	35.440	36.358	37.272	38.185	39.098	39.813	40.925	41.844
.140	33.250	34.166	35.061	35.993	36.916	37.835	38.755	39.675	40.596	41.418	42.442
.160	33.728	34.655	35.577	36.457	37.425	38.350	39.276	40.203	41.131	42.059	42.988
.180	34.181	35.089	36.037	36.957	37.897	38.829	39.761	40.694	41.627	42.548	43.496
.200	34.603	35.537	36.382	37.407	38.343	39.279	40.217	41.154	42.093	43.032	43.973
.220	35.003	35.937	36.883	37.823	38.764	39.609	40.649	41.591	42.536	43.478	44.425
.240	35.386	36.331	37.276	38.221	39.120	40.114	41.060	42.010	42.958	43.907	44.857
.260	35.755	36.698	37.652	38.604	39.555	40.505	41.446	42.412	43.365	44.305	45.273
.280	36.111	37.043	38.020	38.975	39.930	40.786	41.843	42.800	43.754	44.716	45.674
.300	36.457	37.416	38.375	39.329	40.283	41.256	42.213	43.178	44.140	45.102	46.064
.320	36.796	37.736	38.723	39.674	40.651	41.616	42.581	43.533	44.512	45.479	46.438
.340	37.105	38.095	39.015	40.034	40.993	41.969	42.938	43.901	44.822	45.848	46.818
.360	37.453	38.233	39.397	40.368	41.342	42.309	43.072	44.262	45.236	46.210	47.185
.380	37.775	38.745	39.727	40.654	41.681	42.656	43.608	44.612	45.588	46.568	47.543
.400	37.999	39.074	40.051	41.035	41.805	42.889	43.923	44.952	45.939	46.918	47.874
.420	38.314	39.394	40.372	41.363	42.347	43.332	44.316	45.302	46.287	47.273	48.259
.440	38.725	39.712	40.698	41.689	42.664	43.660	44.654	45.643	46.633	47.621	48.611
.460	39.038	40.030	40.817	42.015	43.007	43.996	44.992	45.978	46.977	47.970	48.955
.480	39.156	40.348	41.344	42.341	43.333	44.333	45.329	46.325	47.322	48.318	49.253
.500	39.667	40.667	41.615	42.660	43.667	44.667	45.667	46.667	47.548	48.667	49.667
.520	39.984	40.988	41.886	42.995	43.999	45.003	45.999	47.010	48.014	49.017	50.017
.540	40.303	41.207	42.317	43.271	44.334	45.341	46.349	47.352	48.363	49.371	50.370
.560	40.622	41.610	42.649	43.660	44.615	45.683	46.694	47.645	48.701	49.727	50.738
.580	40.848	41.954	42.768	43.999	45.013	45.971	46.809	48.044	49.070	50.086	51.103
.600	41.283	42.249	43.323	44.342	45.362	46.381	47.399	48.403	49.312	50.455	51.473
.620	41.621	42.645	43.665	44.664	45.701	46.738	47.761	48.784	49.798	50.763	51.784
.640	41.966	42.995	44.019	45.050	46.077	47.104	48.131	49.157	50.184	50.953	52.227
.660	42.293	43.352	44.385	45.387	46.444	47.479	48.267	49.540	50.538	51.600	52.627
.680	42.629	43.714	44.757	45.677	46.828	47.856	48.891	49.929	50.968	52.001	53.034
.700	43.004	43.989	45.142	46.183	47.222	48.262	49.301	50.339	51.378	52.282	53.453
.720	43.232	44.495	45.313	46.586	47.622	48.674	49.717	50.760	51.803	52.710	53.886
.740	43.855	44.905	45.956	47.006	48.055	49.103	50.151	51.198	52.243	53.155	54.333
.760	44.280	45.336	46.391	47.438	48.495	49.552	50.605	51.657	52.708	53.759	54.809
.780	44.728	45.789	46.849	47.908	48.722	49.775	51.066	52.140	53.196	54.251	55.307
.800	45.199	46.269	47.304	48.275	49.455	50.526	51.589	52.651	53.712	54.701	55.833
.820	45.711	46.722	47.854	48.908	49.994	51.061	52.131	53.199	54.261	55.329	56.395
.840	46.260	47.338	48.352	49.492	50.568	51.641	52.716	53.781	54.862	55.934	57.005
.860	46.857	47.946	49.026	50.111	51.195	52.207	53.357	54.434	55.515	56.593	57.670
.880	47.513	48.620	49.647	50.804	51.893	52.982	54.064	55.154	56.241	57.323	58.404
.900	48.289	49.390	50.490	51.589	52.668	53.783	54.878	55.972	57.065	58.158	59.249
.920	49.171	50.039	51.400	52.508	53.614	54.721	55.825	56.929	58.030	58.836	60.231
.940	50.273	51.392	52.517	53.637	54.755	55.872	56.988	58.102	59.215	60.327	61.438
.950	50.940	52.069	53.195	54.324	55.449	56.495	57.695	58.816	59.935	61.054	62.171
.960	51.729	52.866	54.004	55.138	56.271	57.403	58.533	59.662	60.789	61.904	63.040
.970	52.711	53.859	54.996	56.150	57.293	58.434	59.276	60.712	61.849	62.984	64.118
.980	54.035	55.196	56.356	57.514	58.670	59.824	60.813	62.128	63.277	64.425	65.571
.990	56.164	57.347	58.528	59.707	60.884	62.058	63.231	64.402	65.571	66.738	67.903
.995	58.161	59.363	60.563	61.761	62.956	64.149	65.341	66.530	67.717	68.902	70.085
.999	62.420	63.662	64.902	66.139	67.373	68.604	69.833	71.059	72.284	73.505	74.725

NOTES

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