Tables

NORMAL DISTRIBUTION

Normal Distribution (Single-Sided): Proportion (A) of Whole Area Lying to Right of Ordinate Through $x = \mu + z\sigma$ $[z = (x - \mu)/\sigma]$

Deviate (z)	Prefix	0.00	0.01	0.02	0.03	0.04	0.05	0.06	0.07	0.08	0.09	Prefix	Deviate (z)
0.0	0.5	000	960	920	880	840	801	761	721	681	641	0.4	0.0
0.1	0.4	602	562	522	483	443	404	364	325	286	247	0.4	0.1
0.2	0.4	207	168	129	090	052	013	974	936	897	859	0.3	0.2
0.3	0.3	821	783	745	707	669	632	594	557	520	483		0.3
0.4		446	409	372	336	300	264	228	192	156	121	0.3	0.4
0.5	0.3	085	050	015	981	946	912	877	843	810	776	0.2	0.5
0.6	0.2	743	709	676	643	611	578	546	514	483	451		0.6
0.7		420	389	358	327	296	266	236	206	177	148	0.2	0.7
0.8	0.2	119	090	061	033	005	977	949	922	894	867	0.1	0.8
0.9	0.1	841	814	788	762	736	711	685	660	635	611		0.9
1.0		587	562	539	515	492	469	446	423	401	379		1.0
1.1		357	335	314	292	271	251	230	210	190	170	0.1	1.1
1.2	0.1	151	131	112	093	075	056	038	020	003	985	0.0	1.2
1.3	0.0	968	951	934	918	901	885	869	853	838	823		1.3
1.4		808	793	778	764	749	735	721	708	694	681		1.4
1.5		668	655	643	630	618	606	594	582	571	559		1.5
1.6		548	537	526	516	505	495	485	475	465	455		1.6
1.7		446	436	427	418	409	401	392	384	375	367		1.7
1.8		359	351	344	336	329	322	314	307	301	294		1.8
1.9		287	281	274	268	262	256	250	244	239	233		1.9
2.0		228	222	217	212	207	202	197	192	188	183		2.0
2.1		179	174	170	166	162	158	154	150	146	143		2.1
2.2		139	136	132	129	125	122	119	116	113	110	0.0	2.2
2.3	0.0	107	104	102	990	964	939	914	889	866	842	0.00	2.3
2.4	0.00	820	798	776	755	734	714	695	676	657	639		2.4
2.5		621	604	587	570	554	539	523	508	494	480		2.5
2.6		466	453	440	427	415	402	391	379	368	357		2.6
2.7		347	336	326	317	307	298	289	280	272	264		2.7
2.8		256	248	240	233	226	219	212	205	199	193		2.8
2.9	0.00	1.87	181	175	169	164	159	154	149	144	139	0.00	2.9

Extension for Higher Values of the Deviate

Deviate (z)	Proportion of Whole Area (A)	Deviate (z)	Proportion of Whole Area (A)	Deviate (z)	Proportion of Whole Area (A)	Deviate (z)	Proportion of Whole Area (A)
3.0	0.00135	3.5	0.000233	4.0	0.0^4317	4.5	0.0^5340
3.1	0.000968	3.6	0.000159	4.1	0.0^4207	4.6	0.0^5211
3.2	0.000687	3.7	0.000108	4.2	0.0^4133	4.7	0.0^5130
3.3	0.000483	3.8	0.0^4723	4.3	0.0^5854	4.8	0.0^6793
3.4	0.000337	3.9	0.0^4481	4.4	0.0^5541	4.9	0.0^6479
						5.0	0.0^6287

Source: Adapted with permission from O. L. Davies (ed.), *The Design and Analysis of Industrial Experiments,* 2nd ed., Oliver and Boyd, Edinburgh, 1956, condensed and adapted with permission from E. S. Pearson and H. O. Hartley, *Biometrika Tables for Statisticians,* Vol. 1, Cambridge University Press, New York, 1954.

(z is positive in this figure)

μ

$x = \mu + z\sigma$
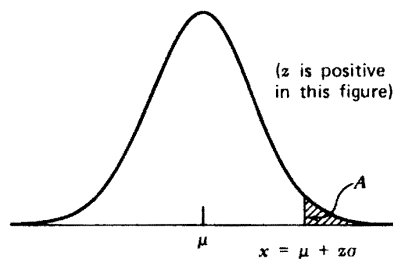
The illustration shows a normal curve. The scales are such that the total area under the curve is unity. The shaded portion is the area A given in the table above. The entries refer to positive values of the argument z. For negative values of z write down the complements of the entries.

Examples. Let $z = +1.96$. The prefix $= 0.0$ and the entry $= 250$, together $0.0250 =$ area to right. Area to left $= 1 - 0.0250 = 0.9750$.

Let $z = -3.00$. The tabulated value $= 0.00135$. Since z is negative, this represents the area to the *left*. Area to right $= 1 - 0.00135 = 0.99865$.

Let $z = +4.50$. Tabulated value $= 0.00000340$. Area to left $= 0.99999660$.

To find the value of z corresponding to a given A, we can use the table in reverse, thus:

Let *area to right* (i.e., A) $= 0.10$. The two adjacent tabulated values are $A = 0.1003$ for $z = 1.28$, and $A = 0.0985$ for $z = 1.29$. We interpolate linearly to obtain the required value of z. Thus $z = 1.28 + (3)(0.01)/18 = 1.2817$.

PERCENTAGE POINTS OF THE *t*-DISTRIBUTION
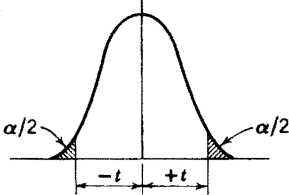
Distribution of *t*

"Probability = Area in Two Tails of Distribution Outside ± *t*-Value in Table"

Degrees of Freedom	Probability									
	0.9	0.7	0.5	0.3	0.2	0.1	0.05	0.02	0.01	0.001
1	0.158	0.510	1.000	1.963	3.078	6.314	12.706	31.821	63.657	636.619
2	0.142	0.445	0.816	1.386	1.886	2.920	4.303	6.965	9.925	31.598
3	0.137	0.424	0.765	1.250	1.638	2.353	3.182	4.541	5.841	12.924
4	0.134	0.414	0.741	1.190	1.533	2.132	2.776	3.747	4.604	8.610
5	0.132	0.408	0.727	1.156	1.476	2.015	2.571	3.365	4.032	6.869
6	0.131	0.404	0.718	1.134	1.440	1.943	2.447	3.143	3.707	5.959
7	0.130	0.402	0.711	1.119	1.415	1.895	2.365	2.998	3.499	5.408
8	0.130	0.399	0.706	1.108	1.397	1.860	2.306	2.896	3.355	5.041
9	0.129	0.398	0.703	1.100	1.383	1.833	2.262	2.821	3.250	4.781
10	0.129	0.397	0.700	1.093	1.372	1.812	2.228	2.764	3.169	4.587
11	0.129	0.396	0.697	1.088	1.363	1.796	2.201	2.718	3.106	4.437
12	0.128	0.395	0.695	1.083	1.356	1.782	2.179	2.681	3.055	4.318
13	0.128	0.394	0.694	1.079	1.350	1.771	2.160	2.650	3.012	4.221
14	0.128	0.393	0.692	1.076	1.345	1.761	2.145	2.624	2.977	4.140
15	0.128	0.393	0.691	1.074	1.341	1.753	2.131	2.602	2.947	4.073
16	0.128	0.392	0.690	1.071	1.337	1.746	2.120	2.583	2.921	4.015
17	0.128	0.392	0.689	1.069	1.333	1.740	2.110	2.567	2.898	3.965
18	0.127	0.392	0.688	1.067	1.330	1.734	2.101	2.552	2.878	3.922
19	0.127	0.391	0.688	1.066	1.328	1.729	2.093	2.539	2.861	3.883
20	0.127	0.391	0.687	1.064	1.325	1.725	2.086	2.528	2.845	3.850
21	0.127	0.391	0.686	1.063	1.323	1.721	2.080	2.518	2.831	3.819
22	0.127	0.390	0.686	1.061	1.321	1.717	2.074	2.508	2.819	3.792
23	0.127	0.390	0.685	1.060	1.319	1.714	2.069	2.500	2.807	3.767
24	0.127	0.390	0.685	1.059	1.318	1.711	2.064	2.492	2.797	3.745
25	0.127	0.390	0.684	1.058	1.316	1.708	2.060	2.485	2.787	3.725
26	0.127	0.390	0.684	1.058	1.315	1.706	2.056	2.479	2.779	3.707
27	0.127	0.389	0.684	1.057	1.314	1.703	2.052	2.473	2.771	3.690
28	0.127	0.389	0.683	1.056	1.313	1.701	2.048	2.467	2.763	3.674
29	0.127	0.389	0.683	1.055	1.311	1.699	2.045	2.462	2.756	3.659
30	0.127	0.389	0.683	1.055	1.310	1.697	2.042	2.457	2.750	3.646
40	0.126	0.388	0.681	1.050	1.303	1.684	2.021	2.423	2.704	3.551
60	0.126	0.387	0.679	1.046	1.296	1.671	2.000	2.390	2.660	3.460
120	0.126	0.386	0.677	1.041	1.289	1.658	1.980	2.358	2.617	3.373
∞	0.126	0.385	0.674	1.036	1.282	1.645	1.960	2.326	2.576	3.291

Source: Abridged from Table III of R. A. Fisher and F. Yates, *Statistical Tables for Biological, Agricultural and Medical Research* (6th ed.) published by Oliver and Boyd, Ltd., Edinburgh, 1964, by permission of the authors and publishers.

PERCENTAGE POINTS OF THE χ^2-DISTRIBUTION

χ^2-Distribution, Selected Upper Percentage Points for ν df, 10% (0.1) to 0.1% (0.001)

ν	Upper-Tail Area Probability					
	0.10	0.05	0.025	0.01	0.005	0.001
1	2.71	3.84	5.02	6.63	7.88	10.8
2	4.61	5.99	7.38	9.21	10.6	13.8
3	6.25	7.81	9.35	11.3	12.8	16.3
4	7.78	9.49	11.1	13.3	14.9	18.5
5	9.24	11.1	12.8	15.1	16.7	20.5
6	10.6	12.6	14.4	16.8	18.5	22.5
7	12.0	14.1	16.0	18.5	20.3	24.3
8	13.4	15.5	17.5	20.1	22.0	26.1
9	14.7	16.9	19.0	21.7	23.6	27.9
10	16.0	18.3	20.5	23.2	25.2	29.6
11	17.3	19.7	21.9	24.7	26.8	31.3
12	18.5	21.0	23.3	26.2	28.3	32.9
13	19.8	22.4	24.7	27.7	29.8	34.5
14	21.1	23.7	26.1	29.1	31.3	36.1
15	22.3	25.0	27.5	30.6	32.8	37.7
16	23.5	26.3	28.8	32.0	34.3	39.3
17	24.8	27.6	30.2	33.4	35.7	40.8
18	26.0	28.9	31.5	34.8	37.2	42.3
19	27.2	30.1	32.9	36.2	38.6	43.8
20	28.4	31.4	34.2	37.6	40.0	45.3
21	29.6	32.7	35.5	38.9	41.4	46.8
22	30.8	33.9	36.8	40.3	42.8	48.3
23	32.0	35.2	38.1	41.6	44.2	49.7
24	33.2	36.4	39.4	43.0	45.6	51.2
25	34.4	37.7	40.6	44.3	46.9	52.6
26	35.6	38.9	41.9	45.6	48.3	54.1
27	36.7	40.1	43.2	47.0	49.6	55.5
28	37.9	41.3	44.5	48.3	51.0	56.9
29	39.1	42.6	45.7	49.6	52.3	58.3
30	40.3	43.8	47.0	50.9	53.7	59.7
40	51.8	55.8	59.3	63.7	66.8	73.4
50	63.2	67.5	71.4	76.2	79.5	86.7
60	74.4	79.1	83.3	88.4	92.0	99.6
70	85.5	90.5	95.0	100.4	104.2	112.3
80	96.6	101.9	106.6	112.3	116.3	124.8
90	107.6	113.1	118.1	124.1	128.3	137.2
100	118.5	124.3	129.6	135.8	140.2	149.4

For $\nu > 100$, the "Wilson–Hilferty formula"

$$\chi^2 = \nu \left\{ 1 - \frac{2}{9\nu} + z \left(\frac{2}{9\nu} \right)^{1/2} \right\}^3$$

provides an approximation, where z is the appropriate normal deviate for the required tail area, namely:

Tail	0.1	0.05	0.025	0.01	0.005	0.001
z	1.2816	1.6449	1.9600	2.3263	2.5758	3.0902

PERCENTAGE POINTS OF THE *F*-DISTRIBUTION
F-Distribution, Upper 10% Points [$F(\nu_1, \nu_2, 0.90)$]

ν_2 \ ν_1	Degrees of Freedom for Numerator									
	1	2	3	4	5	6	7	8	9	10
1	39.86	49.50	53.59	55.83	57.24	58.20	58.91	59.44	59.86	60.19
2	8.53	9.00	9.16	9.24	9.29	9.33	9.35	9.37	9.38	9.39
3	5.54	5.46	5.39	5.34	5.31	5.28	5.27	5.25	5.24	5.23
4	4.54	4.32	4.19	4.11	4.05	4.01	3.98	3.95	3.94	3.92
5	4.06	3.78	3.62	3.52	3.45	3.40	3.37	3.34	3.32	3.30
6	3.78	3.46	3.29	3.18	3.11	3.05	3.01	2.98	2.96	2.94
7	3.59	3.26	3.07	2.96	2.88	2.83	2.78	2.75	2.72	2.70
8	3.46	3.11	2.92	2.81	2.73	2.67	2.62	2.59	2.56	2.54
9	3.36	3.01	2.81	2.69	2.61	2.55	2.51	2.47	2.44	2.42
10	3.29	2.92	2.73	2.61	2.52	2.46	2.41	2.38	2.35	2.32
11	3.23	2.86	2.66	2.54	2.45	2.39	2.34	2.30	2.27	2.25
12	3.18	2.81	2.61	2.48	2.39	2.33	2.28	2.24	2.21	2.19
13	3.14	2.76	2.56	2.43	2.35	2.28	2.23	2.20	2.16	2.14
14	3.10	2.73	2.52	2.39	2.31	2.24	2.19	2.15	2.12	2.10
15	3.07	2.70	2.49	2.36	2.27	2.21	2.16	2.12	2.09	2.06
16	3.05	2.67	2.46	2.33	2.24	2.18	2.13	2.09	2.06	2.03
17	3.03	2.64	2.44	2.31	2.22	2.15	2.10	2.06	2.03	2.00
18	3.01	2.62	2.42	2.29	2.20	2.13	2.08	2.04	2.00	1.98
19	2.99	2.61	2.40	2.27	2.17	2.11	2.06	2.02	1.98	1.96
20	2.97	2.59	2.38	2.25	2.16	2.09	2.04	2.00	1.96	1.94
21	2.96	2.57	2.36	2.23	2.14	2.08	2.02	1.98	1.95	1.92
22	2.95	2.56	2.35	2.22	2.13	2.06	2.01	1.97	1.93	1.90
23	2.94	2.55	2.34	2.21	2.11	2.05	1.99	1.95	1.92	1.89
24	2.93	2.54	2.33	2.19	2.10	2.04	1.98	1.94	1.91	1.88
25	2.92	2.53	2.32	2.18	2.09	2.02	1.97	1.93	1.89	1.87
26	2.91	2.52	2.31	2.17	2.08	2.01	1.96	1.92	1.88	1.86
27	2.90	2.51	2.30	2.17	2.07	2.00	1.95	1.91	1.87	1.85
28	2.89	2.50	2.29	2.16	2.06	2.00	1.94	1.90	1.87	1.84
29	2.89	2.50	2.28	2.15	2.06	1.99	1.93	1.89	1.86	1.83
30	2.88	2.49	2.28	2.14	2.05	1.98	1.93	1.88	1.85	1.82
40	2.84	2.44	2.23	2.09	2.00	1.93	1.87	1.83	1.79	1.76
60	2.79	2.39	2.18	2.04	1.95	1.87	1.82	1.77	1.74	1.71
120	2.75	2.35	2.13	1.99	1.90	1.82	1.77	1.72	1.68	1.65
∞	2.71	2.30	2.08	1.94	1.85	1.77	1.72	1.67	1.63	1.60

Source: Reproduced with permission from E. S. Pearson and H. O. Hartley, *Biometrika Tables for Statisticians*, Vol. 1, Cambridge University Press, New York, 1954.

10%

| Degrees of Freedom for Numerator |
12	15	20	24	30	40	60	120	∞
60.71	61.22	61.74	62.00	62.26	62.53	62.79	63.06	63.33
9.41	9.42	9.44	9.45	9.46	9.47	9.47	9.48	9.49
5.22	5.20	5.18	5.18	5.17	5.16	5.15	5.14	5.13
3.90	3.87	3.84	3.83	3.82	3.80	3.79	3.78	3.76
3.27	3.24	3.21	3.19	3.17	3.16	3.14	3.12	3.10
2.90	2.87	2.84	2.82	2.80	2.78	2.76	2.74	2.72
2.67	2.63	2.59	2.58	2.56	2.54	2.51	2.49	2.47
2.50	2.46	2.42	2.40	2.38	2.36	2.34	2.32	2.29
2.38	2.34	2.30	2.28	2.25	2.23	2.21	2.18	2.16
2.28	2.24	2.20	2.18	2.16	2.13	2.11	2.08	2.06
2.21	2.17	2.12	2.10	2.08	2.05	2.03	2.00	1.97
2.15	2.10	2.06	2.04	2.01	1.99	1.96	1.93	1.90
2.10	2.05	2.01	1.98	1.96	1.93	1.90	1.88	1.85
2.05	2.01	1.96	1.94	1.91	1.89	1.86	1.83	1.80
2.02	1.97	1.92	1.90	1.87	1.85	1.82	1.79	1.76
1.99	1.94	1.89	1.87	1.84	1.81	1.78	1.75	1.72
1.96	1.91	1.86	1.84	1.81	1.78	1.75	1.72	1.69
1.93	1.89	1.84	1.81	1.78	1.75	1.72	1.69	1.66
1.91	1.86	1.81	1.79	1.76	1.73	1.70	1.67	1.63
1.89	1.84	1.79	1.77	1.74	1.71	1.68	1.64	1.61
1.87	1.83	1.78	1.75	1.72	1.69	1.66	1.62	1.59
1.86	1.81	1.76	1.73	1.70	1.67	1.64	1.60	1.57
1.84	1.80	1.74	1.72	1.69	1.66	1.62	1.59	1.55
1.83	1.78	1.73	1.70	1.67	1.64	1.61	1.57	1.53
1.82	1.77	1.72	1.69	1.66	1.63	1.59	1.56	1.52
1.81	1.76	1.71	1.68	1.65	1.61	1.58	1.54	1.50
1.80	1.75	1.70	1.67	1.64	1.60	1.57	1.53	1.49
1.79	1.74	1.69	1.66	1.63	1.59	1.56	1.52	1.48
1.78	1.73	1.68	1.65	1.62	1.58	1.55	1.51	1.47
1.77	1.72	1.67	1.64	1.61	1.57	1.54	1.50	1.46
1.71	1.66	1.61	1.57	1.54	1.51	1.47	1.42	1.38
1.66	1.60	1.54	1.51	1.48	1.44	1.40	1.35	1.29
1.60	1.55	1.48	1.45	1.41	1.37	1.32	1.26	1.19
1.55	1.49	1.42	1.38	1.34	1.30	1.24	1.17	1.00

F-Distribution, Upper 5% Points $[F(\nu_1, \nu_2, 0.95)]$

ν_2 \ ν_1	Degrees of Freedom for Numerator									
	1	2	3	4	5	6	7	8	9	10
1	161.4	199.5	215.7	224.6	230.2	234.0	236.8	238.9	240.5	241.9
2	18.51	19.00	19.16	19.25	19.30	19.33	19.35	19.37	19.38	19.40
3	10.13	9.55	9.28	9.12	9.01	8.94	8.89	8.85	8.81	8.79
4	7.71	6.94	6.59	6.39	6.26	6.16	6.09	6.04	6.00	5.96
5	6.61	5.79	5.41	5.19	5.05	4.95	4.88	4.82	4.77	4.74
6	5.99	5.14	4.76	4.53	4.39	4.28	4.21	4.15	4.10	4.06
7	5.59	4.74	4.35	4.12	3.97	3.87	3.79	3.73	3.68	3.64
8	5.32	4.46	4.07	3.84	3.69	3.58	3.50	3.44	3.39	3.35
9	5.12	4.26	3.86	3.63	3.48	3.37	3.29	3.23	3.18	3.14
10	4.96	4.10	3.71	3.48	3.33	3.22	3.14	3.07	3.02	2.98
11	4.84	3.98	3.59	3.36	3.20	3.09	3.01	2.95	2.90	2.85
12	4.75	3.89	3.49	3.26	3.11	3.00	2.91	2.85	2.80	2.75
13	4.67	3.81	3.41	3.18	3.03	2.92	2.83	2.77	2.71	2.67
14	4.60	3.74	3.34	3.11	2.96	2.85	2.76	2.70	2.65	2.60
15	4.54	3.68	3.29	3.06	2.90	2.79	2.71	2.64	2.59	2.54
16	4.49	3.63	3.24	3.01	2.85	2.74	2.66	2.59	2.54	2.49
17	4.45	3.59	3.20	2.96	2.81	2.70	2.61	2.55	2.49	2.45
18	4.41	3.55	3.16	2.93	2.77	2.66	2.58	2.51	2.46	2.41
19	4.38	3.52	3.13	2.90	2.74	2.63	2.54	2.48	2.42	2.38
20	4.35	3.49	3.10	2.87	2.71	2.60	2.51	2.45	2.39	2.35
21	4.32	3.47	3.07	2.84	2.68	2.57	2.49	2.42	2.37	2.32
22	4.30	3.44	3.05	2.82	2.66	2.55	2.46	2.40	2.34	2.30
23	4.28	3.42	3.03	2.80	2.64	2.53	2.44	2.37	2.32	2.27
24	4.26	3.40	3.01	2.78	2.62	2.51	2.42	2.36	2.30	2.25
25	4.24	3.39	2.99	2.76	2.60	2.49	2.40	2.34	2.28	2.24
26	4.23	3.37	2.98	2.74	2.59	2.47	2.39	2.32	2.27	2.22
27	4.21	3.35	2.96	2.73	2.57	2.46	2.37	2.31	2.25	2.20
28	4.20	3.34	2.95	2.71	2.56	2.45	2.36	2.29	2.24	2.19
29	4.18	3.33	2.93	2.70	2.55	2.43	2.35	2.28	2.22	2.18
30	4.17	3.32	2.92	2.69	2.53	2.42	2.33	2.27	2.21	2.16
40	4.08	3.23	2.84	2.61	2.45	2.34	2.25	2.18	2.12	2.08
60	4.00	3.15	2.76	2.53	2.37	2.25	2.17	2.10	2.04	1.99
120	3.92	3.07	2.68	2.45	2.29	2.17	2.09	2.02	1.96	1.91
∞	3.84	3.00	2.60	2.37	2.21	2.10	2.01	1.94	1.88	1.83

Source: Reproduced with permission from E. S. Pearson and H. O. Hartley, *Biometrika Tables for Statisticians*, Vol. 1, Cambridge University Press, New York, 1954.

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\multicolumn{9}{c}{Degrees of Freedom for Numerator}								
12	15	20	24	30	40	60	120	∞
243.9	245.9	248.0	249.1	250.1	251.1	252.2	253.3	254.3
19.41	19.43	19.45	19.45	19.46	19.47	19.48	19.49	19.50
8.74	8.70	8.66	8.64	8.62	8.59	8.57	8.55	8.53
5.91	5.86	5.80	5.77	5.75	5.72	5.69	5.66	5.63
4.68	4.62	4.56	4.53	4.50	4.46	4.43	4.40	4.36
4.00	3.94	3.87	3.84	3.81	3.77	3.74	3.70	3.67
3.57	3.51	3.44	3.41	3.38	3.34	3.30	3.27	3.23
3.28	3.22	3.15	3.12	3.08	3.04	3.01	2.97	2.93
3.07	3.01	2.94	2.90	2.86	2.83	2.79	2.75	2.71
2.91	2.85	2.77	2.74	2.70	2.66	2.62	2.58	2.54
2.79	2.72	2.65	2.61	2.57	2.53	2.49	2.45	2.40
2.69	2.62	2.54	2.51	2.47	2.43	2.38	2.34	2.30
2.60	2.53	2.46	2.42	2.38	2.34	2.30	2.25	2.21
2.53	2.46	2.39	2.35	2.31	2.27	2.22	2.18	2.13
2.48	2.40	2.33	2.29	2.25	2.20	2.16	2.11	2.07
2.42	2.35	2.28	2.24	2.19	2.15	2.11	2.06	2.01
2.38	2.31	2.23	2.19	2.15	2.10	2.06	2.01	1.96
2.34	2.27	2.19	2.15	2.11	2.06	2.02	1.97	1.92
2.31	2.23	2.16	2.11	2.07	2.03	1.98	1.93	1.88
2.28	2.20	2.12	2.08	2.04	1.99	1.95	1.90	1.84
2.25	2.18	2.10	2.05	2.01	1.96	1.92	1.87	1.81
2.23	2.15	2.07	2.03	1.98	1.94	1.89	1.84	1.78
2.20	2.13	2.05	2.01	1.96	1.91	1.86	1.81	1.76
2.18	2.11	2.03	1.98	1.94	1.89	1.84	1.79	1.73
2.16	2.09	2.01	1.96	1.92	1.87	1.82	1.77	1.71
2.15	2.07	1.99	1.95	1.90	1.85	1.80	1.75	1.69
2.13	2.06	1.97	1.93	1.88	1.84	1.79	1.73	1.67
2.12	2.04	1.96	1.91	1.87	1.82	1.77	1.71	1.65
2.10	2.03	1.94	1.90	1.85	1.81	1.75	1.70	1.64
2.09	2.01	1.93	1.89	1.84	1.79	1.74	1.68	1.62
2.00	1.92	1.84	1.79	1.74	1.69	1.64	1.58	1.51
1.92	1.84	1.75	1.70	1.65	1.59	1.53	1.47	1.39
1.83	1.75	1.66	1.61	1.55	1.50	1.43	1.35	1.25
1.75	1.67	1.57	1.52	1.46	1.39	1.32	1.22	1.00

F-Distribution, Upper 1% Points [$F(\nu_1, \nu_2, 0.99)$]

ν_2 \ ν_1	Degrees of Freedom for Numerator									
	1	2	3	4	5	6	7	8	9	10
1	4052	4999.5	5403	5625	5764	5859	5928	5982	6022	6056
2	98.50	99.00	99.17	99.25	99.30	99.33	99.36	99.37	99.39	99.40
3	34.12	30.82	29.46	28.71	28.24	27.91	27.67	27.49	27.35	27.23
4	21.20	18.00	16.69	15.98	15.52	15.21	14.98	14.80	14.66	14.55
5	16.26	13.27	12.06	11.39	10.97	10.67	10.46	10.29	10.16	10.05
6	13.75	10.92	9.78	9.15	8.75	8.47	8.26	8.10	7.98	7.87
7	12.25	9.55	8.45	7.85	7.46	7.19	6.99	6.84	6.72	6.62
8	11.26	8.65	7.59	7.01	6.63	6.37	6.18	6.03	5.91	5.81
9	10.56	8.02	6.99	6.42	6.06	5.80	5.61	5.47	5.35	5.26
10	10.04	7.56	6.55	5.99	5.64	5.39	5.20	5.06	4.94	4.85
11	9.65	7.21	6.22	5.67	5.32	5.07	4.89	4.74	4.63	4.54
12	9.33	6.93	5.95	5.41	5.06	4.82	4.64	4.50	4.39	4.30
13	9.07	6.70	5.74	5.21	4.86	4.62	4.44	4.30	4.19	4.10
14	8.86	6.51	5.56	5.04	4.69	4.46	4.28	4.14	4.03	3.94
15	8.68	6.36	5.42	4.89	4.56	4.32	4.14	4.00	3.89	3.80
16	8.53	6.23	5.29	4.77	4.44	4.20	4.03	3.89	3.78	3.69
17	8.40	6.11	5.18	4.67	4.34	4.10	3.93	3.79	3.68	3.59
18	8.29	6.01	5.09	4.58	4.25	4.01	3.84	3.71	3.60	3.51
19	8.18	5.93	5.01	4.50	4.17	3.94	3.77	3.63	3.52	3.43
20	8.10	5.85	4.94	4.43	4.10	3.87	3.70	3.56	3.46	3.37
21	8.02	5.78	4.87	4.37	4.04	3.81	3.64	3.51	3.40	3.31
22	7.95	5.72	4.82	4.31	3.99	3.76	3.59	3.45	3.35	3.26
23	7.88	5.66	4.76	4.26	3.94	3.71	3.54	3.41	3.30	3.21
24	7.82	5.61	4.72	4.22	3.90	3.67	3.50	3.36	3.26	3.17
25	7.77	5.57	4.68	4.18	3.85	3.63	3.46	3.32	3.22	3.13
26	7.72	5.53	4.64	4.14	3.82	3.59	3.42	3.29	3.18	3.09
27	7.68	5.49	4.60	4.11	3.78	3.56	3.39	3.26	3.15	3.06
28	7.64	5.45	4.57	4.07	3.75	3.53	3.36	3.23	3.12	3.03
29	7.60	5.42	4.54	4.04	3.73	3.50	3.33	3.20	3.09	3.00
30	7.56	5.39	4.51	4.02	3.70	3.47	3.30	3.17	3.07	2.98
40	7.31	5.18	4.31	3.83	3.51	3.29	3.12	2.99	2.89	2.80
60	7.08	4.98	4.13	3.65	3.34	3.12	2.95	2.82	2.72	2.63
120	6.85	4.79	3.95	3.48	3.17	2.96	2.79	2.66	2.56	2.47
∞	6.63	4.61	3.78	3.32	3.02	2.80	2.64	2.51	2.41	2.32

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| \multicolumn{9}{c}{Degrees of Freedom for Numerator} |
12	15	20	24	30	40	60	120	∞
6106	6157	6209	6235	6261	6287	6313	6339	6366
99.42	99.43	99.45	99.46	99.47	99.47	99.48	99.49	99.50
27.05	26.87	26.69	26.60	26.50	26.41	26.32	26.22	26.13
14.37	14.20	14.02	13.93	13.84	13.75	13.65	13.56	13.46
9.89	9.72	9.55	9.47	9.38	9.29	9.20	9.11	9.02
7.72	7.56	7.40	7.31	7.23	7.14	7.06	6.97	6.88
6.47	6.31	6.16	6.07	5.99	5.91	5.82	5.74	5.65
5.67	5.52	5.36	5.28	5.20	5.12	5.03	4.95	4.86
5.11	4.96	4.81	4.73	4.65	4.57	4.48	4.40	4.31
4.71	4.56	4.41	4.33	4.25	4.17	4.08	4.00	3.91
4.40	4.25	4.10	4.02	3.94	3.86	3.78	3.69	3.60
4.16	4.01	3.86	3.78	3.70	3.62	3.54	3.45	3.36
3.96	3.82	3.66	3.59	3.51	3.43	3.34	3.25	3.17
3.80	3.66	3.51	3.43	3.35	3.27	3.18	3.09	3.00
3.67	3.52	3.37	3.29	3.21	3.13	3.05	2.96	2.87
3.55	3.41	3.26	3.18	3.10	3.02	2.93	2.84	2.75
3.46	3.31	3.16	3.08	3.00	2.92	2.83	2.75	2.65
3.37	3.23	3.08	3.00	2.92	2.84	2.75	2.66	2.57
3.30	3.15	3.00	2.92	2.84	2.76	2.67	2.58	2.49
3.23	3.09	2.94	2.86	2.78	2.69	2.61	2.52	2.42
3.17	3.03	2.88	2.80	2.72	2.64	2.55	2.46	2.36
3.12	2.98	2.83	2.75	2.67	2.58	2.50	2.40	2.31
3.07	2.93	2.78	2.70	2.62	2.54	2.45	2.35	2.26
3.03	2.89	2.74	2.66	2.58	2.49	2.40	2.31	2.21
2.99	2.85	2.70	2.62	2.54	2.45	2.36	2.27	2.17
2.96	2.81	2.66	2.58	2.50	2.42	2.33	2.23	2.13
2.93	2.78	2.63	2.55	2.47	2.38	2.29	2.20	2.10
2.90	2.75	2.60	2.52	2.44	2.35	2.26	2.17	2.06
2.87	2.73	2.57	2.49	2.41	2.33	2.23	2.14	2.03
2.84	2.70	2.55	2.47	2.39	2.30	2.21	2.11	2.01
2.66	2.52	2.37	2.29	2.20	2.11	2.02	1.92	1.80
2.50	2.35	2.20	2.12	2.03	1.94	1.84	1.73	1.60
2.34	2.19	2.03	1.95	1.86	1.76	1.66	1.53	1.38
2.18	2.04	1.88	1.79	1.70	1.59	1.47	1.32	1.00