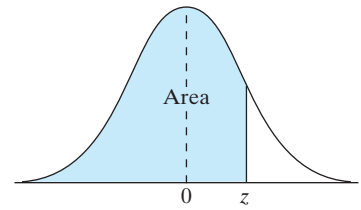


STATISTICAL TABLES

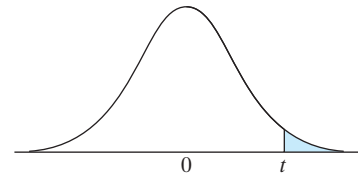
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TABLE 3 Areas Under the Normal Curve



<i>z</i>	.00	.01	.02	.03	.04	.05	.06	.07	.08	.09
-3.4	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0003	0.0002
-3.3	0.0005	0.0005	0.0005	0.0004	0.0004	0.0004	0.0004	0.0004	0.0004	0.0003
-3.2	0.0007	0.0007	0.0006	0.0006	0.0006	0.0006	0.0006	0.0005	0.0005	0.0005
-3.1	0.0010	0.0009	0.0009	0.0009	0.0008	0.0008	0.0008	0.0008	0.0007	0.0007
-3.0	0.0013	0.0013	0.0013	0.0012	0.0012	0.0011	0.0011	0.0011	0.0010	0.0010
-2.9	0.0019	0.0018	0.0017	0.0017	0.0016	0.0016	0.0015	0.0015	0.0014	0.0014
-2.8	0.0026	0.0025	0.0024	0.0023	0.0023	0.0022	0.0021	0.0021	0.0020	0.0019
-2.7	0.0035	0.0034	0.0033	0.0032	0.0031	0.0030	0.0029	0.0028	0.0027	0.0026
-2.6	0.0047	0.0045	0.0044	0.0043	0.0041	0.0040	0.0039	0.0038	0.0037	0.0036
-2.5	0.0062	0.0060	0.0059	0.0057	0.0055	0.0054	0.0052	0.0051	0.0049	0.0048
-2.4	0.0082	0.0080	0.0078	0.0075	0.0073	0.0071	0.0069	0.0068	0.0066	0.0064
-2.3	0.0107	0.0104	0.0102	0.0099	0.0096	0.0094	0.0091	0.0089	0.0087	0.0084
-2.2	0.0139	0.0136	0.0132	0.0129	0.0125	0.0122	0.0119	0.0116	0.0113	0.0110
-2.1	0.0179	0.0174	0.0170	0.0166	0.0162	0.0158	0.0154	0.0150	0.0146	0.0143
-2.0	0.0228	0.0222	0.0217	0.0212	0.0207	0.0202	0.0197	0.0192	0.0188	0.0183
-1.9	0.0287	0.0281	0.0274	0.0268	0.0262	0.0256	0.0250	0.0244	0.0239	0.0233
-1.8	0.0359	0.0352	0.0344	0.0336	0.0329	0.0322	0.0314	0.0307	0.0301	0.0294
-1.7	0.0446	0.0436	0.0427	0.0418	0.0409	0.0401	0.0392	0.0384	0.0375	0.0367
-1.6	0.0548	0.0537	0.0526	0.0516	0.0505	0.0495	0.0485	0.0475	0.0465	0.0455
-1.5	0.0668	0.0655	0.0643	0.0630	0.0618	0.0606	0.0594	0.0582	0.0571	0.0559
-1.4	0.0808	0.0793	0.0778	0.0764	0.0749	0.0735	0.0722	0.0708	0.0694	0.0681
-1.3	0.0968	0.0951	0.0934	0.0918	0.0901	0.0885	0.0869	0.0853	0.0838	0.0823
-1.2	0.1151	0.1131	0.1112	0.1093	0.1075	0.1056	0.1038	0.1020	0.1003	0.0985
-1.1	0.1357	0.1335	0.1314	0.1292	0.1271	0.1251	0.1230	0.1210	0.1190	0.1170
-1.0	0.1587	0.1562	0.1539	0.1515	0.1492	0.1469	0.1446	0.1423	0.1401	0.1379
-0.9	0.1841	0.1814	0.1788	0.1762	0.1736	0.1711	0.1685	0.1660	0.1635	0.1611
-0.8	0.2119	0.2090	0.2061	0.2033	0.2005	0.1977	0.1949	0.1922	0.1894	0.1867
-0.7	0.2420	0.2389	0.2358	0.2327	0.2296	0.2266	0.2236	0.2206	0.2177	0.2148
-0.6	0.2743	0.2709	0.2676	0.2643	0.2611	0.2578	0.2546	0.2514	0.2483	0.2451
-0.5	0.3085	0.3050	0.3015	0.2981	0.2946	0.2912	0.2877	0.2843	0.2810	0.2776
-0.4	0.3446	0.3409	0.3372	0.3336	0.3300	0.3264	0.3228	0.3192	0.3156	0.3121
-0.3	0.3821	0.3783	0.3745	0.3707	0.3669	0.3632	0.3594	0.3557	0.3520	0.3483
-0.2	0.4207	0.4168	0.4129	0.4090	0.4052	0.4013	0.3974	0.3936	0.3897	0.3859
-0.1	0.4602	0.4562	0.4522	0.4483	0.4443	0.4404	0.4364	0.4325	0.4286	0.4247
-0.0	0.5000	0.4960	0.4920	0.4880	0.4840	0.4801	0.4761	0.4721	0.4681	0.4641

TABLE 4 Critical Values of Student's *t* Distribution



df	UPPER TAIL PROBABILITY									
	0.20	0.10	0.05	0.04	0.03	0.025	0.02	0.01	0.005	0.0005
1	1.376	3.078	6.314	7.916	10.579	12.706	15.895	31.821	63.657	636.619
2	1.061	1.886	2.920	3.320	3.896	4.303	4.849	6.965	9.925	31.599
3	0.978	1.638	2.353	2.605	2.951	3.182	3.482	4.541	5.841	12.924
4	0.941	1.533	2.132	2.333	2.601	2.776	2.999	3.747	4.604	8.610
5	0.920	1.476	2.015	2.191	2.422	2.571	2.757	3.365	4.032	6.869
6	0.906	1.440	1.943	2.104	2.313	2.447	2.612	3.143	3.707	5.959
7	0.896	1.415	1.895	2.046	2.241	2.365	2.517	2.998	3.499	5.408
8	0.889	1.397	1.860	2.004	2.189	2.306	2.449	2.896	3.355	5.041
9	0.883	1.383	1.833	1.973	2.150	2.262	2.398	2.821	3.250	4.781
10	0.879	1.372	1.812	1.948	2.120	2.228	2.359	2.764	3.169	4.587
11	0.876	1.363	1.796	1.928	2.096	2.201	2.328	2.718	3.106	4.437
12	0.873	1.356	1.782	1.912	2.076	2.179	2.303	2.681	3.055	4.318
13	0.870	1.350	1.771	1.899	2.060	2.160	2.282	2.650	3.012	4.221
14	0.868	1.345	1.761	1.888	2.046	2.145	2.264	2.624	2.977	4.140
15	0.866	1.341	1.753	1.878	2.034	2.131	2.249	2.602	2.947	4.073
16	0.865	1.337	1.746	1.869	2.024	2.120	2.235	2.583	2.921	4.015
17	0.863	1.333	1.740	1.862	2.015	2.110	2.224	2.567	2.898	3.965
18	0.862	1.330	1.734	1.855	2.007	2.101	2.214	2.552	2.878	3.922
19	0.861	1.328	1.729	1.850	2.000	2.093	2.205	2.539	2.861	3.883
20	0.860	1.325	1.725	1.844	1.994	2.086	2.197	2.528	2.845	3.850
21	0.859	1.323	1.721	1.840	1.988	2.080	2.189	2.518	2.831	3.819
22	0.858	1.321	1.717	1.835	1.983	2.074	2.183	2.508	2.819	3.792
23	0.858	1.319	1.714	1.832	1.978	2.069	2.177	2.500	2.807	3.768
24	0.857	1.318	1.711	1.828	1.974	2.064	2.172	2.492	2.797	3.745
25	0.856	1.316	1.708	1.825	1.970	2.060	2.167	2.485	2.787	3.725
26	0.856	1.315	1.706	1.822	1.967	2.056	2.162	2.479	2.779	3.707
27	0.855	1.314	1.703	1.819	1.963	2.052	2.158	2.473	2.771	3.690
28	0.855	1.313	1.701	1.817	1.960	2.048	2.154	2.467	2.763	3.674
29	0.854	1.311	1.699	1.814	1.957	2.045	2.150	2.462	2.756	3.659
30	0.854	1.310	1.697	1.812	1.955	2.042	2.147	2.457	2.750	3.646
40	0.851	1.303	1.684	1.796	1.936	2.021	2.123	2.423	2.704	3.551
50	0.849	1.299	1.676	1.787	1.924	2.009	2.109	2.403	2.678	3.496
60	0.848	1.296	1.671	1.781	1.917	2.000	2.099	2.390	2.660	3.460
70	0.847	1.294	1.667	1.776	1.912	1.994	2.093	2.381	2.648	3.435
80	0.846	1.292	1.664	1.773	1.908	1.990	2.088	2.374	2.639	3.416
100	0.845	1.290	1.660	1.769	1.902	1.984	2.081	2.364	2.626	3.390
140	0.844	1.288	1.656	1.763	1.896	1.977	2.073	2.353	2.611	3.361
1000	0.842	1.282	1.646	1.752	1.883	1.962	2.056	2.330	2.581	3.300
∞	0.842	1.282	1.645	1.751	1.881	1.960	2.054	2.326	2.576	3.291
	60%	80%	90%	92%	94%	95%	96%	98%	99%	99.9%
	CRITICAL VALUE FOR CONFIDENCE LEVEL									

TABLE 5 Sample Sizes Needed for Selected Power Levels for Independent-Samples t Test

POWER →	SIGNIFICANCE LEVEL (TWO-TAILED TEST)																							
	α = 0.01						α = 0.02						α = 0.05						α = 0.10					
	0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50	
0.20																								
0.25																								
0.30																								
0.35																								
0.40																								
0.45																								
0.50																								
0.55																								
0.60																								
0.65																								
0.70																								
0.75																								
0.80																								
0.85																								
0.90																								
0.95																								
1.00																								

POWER →	SIGNIFICANCE LEVEL (ONE-TAILED TEST)																																		
	α = 0.005									α = 0.01									α = 0.025									α = 0.05							
	0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50		0.99	0.95	0.90	0.80	0.50												
0.20																																			
0.25																																			
0.30																																			
0.35																																			
0.40																																			
0.45																																			
0.50																																			
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0.70																																			
0.75																																			
0.80																																			
0.85																																			
0.90																																			
0.95																																			
1.00																																			

Continued

TABLE 5 Sample Sizes Needed for Selected Power Levels for Independent-Samples *t* Test (continued)

POWER →	SIGNIFICANCE LEVEL (TWO-TAILED TEST)																						
	α = 0.01				α = 0.02				α = 0.05				α = 0.10										
	0.99	0.95	0.90	0.80	0.50	0.80	0.90	0.95	0.99	0.95	0.90	0.80	0.50	0.99	0.95	0.90	0.80	0.50					
1.1	42	32	27	22	13	19	23	28	38	28	23	19	11	32	23	19	14	8	27	19	15	12	6
1.2	36	27	23	18	11	16	20	24	32	24	20	16	9	27	20	16	12	7	23	16	13	10	5
1.3	31	23	20	16	10	14	17	21	28	21	17	14	8	23	17	14	11	6	20	14	11	9	5
1.4	27	20	17	14	9	12	15	18	24	18	15	12	8	20	15	12	10	6	17	12	10	8	4
1.5	24	18	15	13	8	11	14	16	21	16	14	11	7	18	13	11	9	5	15	11	9	7	4
1.6	21	16	14	11	7	10	12	14	19	14	12	10	6	16	12	10	8	5	14	10	8	6	4
1.7	19	15	13	10	7	9	11	13	17	13	11	9	6	14	11	9	7	4	12	9	7	6	3
1.8	17	13	11	10	6	8	10	12	15	12	10	8	5	13	10	8	6	4	11	8	7	5	3
1.9	16	12	11	9	6	7	9	11	14	11	9	8	5	12	9	7	6	4	10	7	6	5	3
2.0	14	11	10	8	6	7	9	10	13	10	9	7	5	11	8	7	6	4	9	7	6	4	2.0
2.1	13	10	9	8	5	7	8	9	12	9	8	7	5	10	8	6	5	3	8	6	5	4	2.1
2.2	12	10	8	7	5	6	7	8	11	9	7	6	4	9	7	6	5	3	8	6	5	4	2.2
2.3	11	9	8	7	5	6	7	8	10	8	7	6	4	9	7	6	5	3	7	5	5	4	2.3
2.4	11	9	8	6	5	6	7	8	10	8	7	6	4	8	6	5	4	3	7	5	4	4	2.4
2.5	10	8	7	6	4	5	6	7	9	7	6	5	4	8	6	5	4	3	6	5	4	3	2.5
3.0	8	6	6	5	4	4	5	6	7	6	5	4	3	6	5	4	4	3	5	4	3	3	3.0
3.5	6	5	5	4	3	3	4	5	6	5	4	4	3	5	4	4	3	3	4	4	3	3	3.5
4.0	6	5	4	4	4	3	4	5	5	4	4	3	3	4	4	3	3	3	4	4	3	3	4.0

SIGNIFICANCE LEVEL (ONE-TAILED TEST)

POWER →	SIGNIFICANCE LEVEL (ONE-TAILED TEST)																					
	α = 0.05																					
1.1	27	19	15	12	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38	40
1.2	23	16	13	10	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37	39
1.3	20	14	11	9	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36	38
1.4	17	12	10	8	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35	37
1.5	15	11	9	7	2	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34	36
1.6	14	10	8	6	2	3	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33	35
1.7	13	9	7	5	2	3	4	6	8	10	12	14	16	18	20	22	24	26	28	30	32	34
1.8	12	8	6	4	2	3	4	5	7	9	11	13	15	17	19	21	23	25	27	29	31	33
1.9	11	7	5	3	2	3	4	5	6	8	10	12	14	16	18	20	22	24	26	28	30	32
2.0	10	6	4	2	2	3	4	5	6	7	9	11	13	15	17	19	21	23	25	27	29	31
2.1	9	5	3	2	2	3	4	5	6	7	8	10	12	14	16	18	20	22	24	26	28	30
2.2	8	4	2	1	2	3	4	5	6	7	8	9	11	13	15	17	19	21	23	25	27	29
2.3	7	3	2	1	2	3	4	5	6	7	8	9	10	12	14	16	18	20	22	24	26	28
2.4	6	2	1	1	2	3	4	5	6	7	8	9	10	11	13	15	17	19	21	23	25	27
2.5	5	1	1	1	2	3	4	5	6	7	8	9	10	11	12	14	16	18	20	22	24	26
3.0	4	1	1	1	2	3	4	5	6	7	8	9	10	11	12	13	15	17	19	21	23	25
3.5	3	1	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	16	18	20	22	24
4.0	3	1	1	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	17	19	21	23

Source: "Number of observations for *t*-test of difference between two means." *Research*, Volume 1 (1948), pp. 520-525. Used with permission of the Longman Group UK Ltd. and Butterworth Scientific Publications.

TABLE 6 Critical values and *P*-values of U_s for the Wilcoxon-Mann-Whitney test

Note: Because the Wilcoxon-Mann-Whitney test null distribution is discrete, this table provides selected values of the test statistic U_s in **bold type** and corresponding *P*-values for a non-directional alternative in *italics*. Directional *P*-values are found by dividing the numbers in italics in half.

<i>n</i>	<i>n'</i>	0.20	0.10	0.05	0.025	0.01	0.005
3	2	6 <i>0.200</i>					
	3	8 <i>0.200</i>	9 <i>0.100</i>				
4	2	8 <i>0.133</i>					
	3	11 <i>0.114</i>	12 <i>0.057</i>				
	4	13 <i>0.200</i>	15 <i>0.057</i>	16 <i>0.029</i>			
5	2	9 <i>0.191</i>	10 <i>0.095</i>				
	3	13 <i>0.143</i>	14 <i>0.071</i>	15 <i>0.036</i>			
	4	16 <i>0.191</i>	18 <i>0.064</i>	19 <i>0.032</i>	20 <i>0.016</i>		
	5	20 <i>0.151</i>	21 <i>0.095</i>	23 <i>0.032</i>	24 <i>0.016</i>	25 <i>0.0079</i>	
6	2	11 <i>0.143</i>	12 <i>0.071</i>				
	3	15 <i>0.167</i>	16 <i>0.095</i>	17 <i>0.048</i>	18 <i>0.024</i>		
	4	19 <i>0.171</i>	21 <i>0.067</i>	22 <i>0.038</i>	23 <i>0.019</i>	24 <i>0.0095</i>	
	5	23 <i>0.178</i>	25 <i>0.082</i>	27 <i>0.030</i>	28 <i>0.017</i>	29 <i>0.0087</i>	30 <i>0.0043</i>
	6	27 <i>0.180</i>	29 <i>0.093</i>	31 <i>0.041</i>	33 <i>0.015</i>	34 <i>0.0087</i>	35 <i>0.0043</i>
	7	31 <i>0.181</i>	34 <i>0.073</i>	36 <i>0.035</i>	37 <i>0.022</i>	39 <i>0.0082</i>	40 <i>0.0047</i>
7	2	13 <i>0.111</i>	14 <i>0.056</i>				
	3	17 <i>0.183</i>	19 <i>0.067</i>	20 <i>0.033</i>	21 <i>0.017</i>		
	4	22 <i>0.164</i>	24 <i>0.072</i>	25 <i>0.042</i>	26 <i>0.024</i>	28 <i>0.0061</i>	
	5	27 <i>0.149</i>	29 <i>0.073</i>	30 <i>0.048</i>	32 <i>0.018</i>	34 <i>0.0051</i>	35 <i>0.0025</i>
	6	31 <i>0.181</i>	34 <i>0.073</i>	36 <i>0.035</i>	37 <i>0.022</i>	39 <i>0.0082</i>	40 <i>0.0047</i>
	7	36 <i>0.165</i>	38 <i>0.097</i>	41 <i>0.038</i>	43 <i>0.018</i>	45 <i>0.0070</i>	46 <i>0.0041</i>
	8	40 <i>0.189</i>	43 <i>0.094</i>	46 <i>0.041</i>	48 <i>0.021</i>	50 <i>0.0093</i>	52 <i>0.0037</i>
	9	45 <i>0.195</i>	49 <i>0.083</i>	51 <i>0.050</i>	54 <i>0.021</i>	57 <i>0.0070</i>	58 <i>0.0047</i>
8	2	14 <i>0.178</i>	15 <i>0.089</i>	16 <i>0.044</i>			
	3	19 <i>0.194</i>	21 <i>0.085</i>	22 <i>0.049</i>	23 <i>0.024</i>		
	4	25 <i>0.154</i>	27 <i>0.073</i>	28 <i>0.049</i>	30 <i>0.016</i>	31 <i>0.0081</i>	32 <i>0.0040</i>
	5	30 <i>0.171</i>	32 <i>0.093</i>	34 <i>0.045</i>	36 <i>0.019</i>	38 <i>0.0062</i>	39 <i>0.0031</i>
	6	35 <i>0.181</i>	38 <i>0.081</i>	40 <i>0.043</i>	42 <i>0.020</i>	44 <i>0.0080</i>	45 <i>0.0047</i>
	7	40 <i>0.189</i>	43 <i>0.094</i>	46 <i>0.041</i>	48 <i>0.021</i>	50 <i>0.0093</i>	52 <i>0.0037</i>
	8	45 <i>0.195</i>	49 <i>0.083</i>	51 <i>0.050</i>	54 <i>0.021</i>	57 <i>0.0070</i>	58 <i>0.0047</i>
	9	50 <i>0.200</i>	54 <i>0.093</i>	57 <i>0.046</i>	60 <i>0.021</i>	63 <i>0.0079</i>	65 <i>0.0037</i>
	10	56 <i>0.190</i>	60 <i>0.094</i>	64 <i>0.040</i>	66 <i>0.024</i>	70 <i>0.0078</i>	72 <i>0.0040</i>
9	2	16 <i>0.146</i>	17 <i>0.073</i>	18 <i>0.036</i>			
	3	22 <i>0.146</i>	23 <i>0.100</i>	25 <i>0.036</i>	26 <i>0.018</i>	27 <i>0.0091</i>	
	4	27 <i>0.199</i>	30 <i>0.076</i>	32 <i>0.034</i>	33 <i>0.020</i>	35 <i>0.0056</i>	36 <i>0.0028</i>
	5	33 <i>0.190</i>	36 <i>0.083</i>	38 <i>0.042</i>	40 <i>0.019</i>	42 <i>0.0070</i>	43 <i>0.0040</i>
	6	39 <i>0.181</i>	42 <i>0.088</i>	44 <i>0.050</i>	47 <i>0.018</i>	49 <i>0.0076</i>	50 <i>0.0048</i>
	7	45 <i>0.174</i>	48 <i>0.091</i>	51 <i>0.042</i>	53 <i>0.023</i>	56 <i>0.0079</i>	58 <i>0.0033</i>
	8	50 <i>0.200</i>	54 <i>0.093</i>	57 <i>0.046</i>	60 <i>0.021</i>	63 <i>0.0079</i>	65 <i>0.0037</i>
	9	56 <i>0.190</i>	60 <i>0.094</i>	64 <i>0.040</i>	66 <i>0.024</i>	70 <i>0.0078</i>	72 <i>0.0040</i>
	10	62 <i>0.182</i>	66 <i>0.095</i>	70 <i>0.044</i>	73 <i>0.022</i>	77 <i>0.0076</i>	79 <i>0.0041</i>
	11	68 <i>0.190</i>	73 <i>0.089</i>	77 <i>0.043</i>	80 <i>0.023</i>	84 <i>0.0089</i>	87 <i>0.0039</i>

Continued

TABLE 6 Critical values and P -values of U_s for the Wilcoxon-Mann-Whitney test (continued)

n	n'	0.20	0.10	0.05	0.025	0.01	0.005
11	2	19 0.154	21 0.051	22 0.026			
	3	26 0.170	28 0.088	30 0.039	31 0.022	33 0.0055	
	4	33 0.177	36 0.078	38 0.040	40 0.018	42 0.0059	43 0.0029
	5	40 0.180	43 0.090	46 0.038	48 0.019	50 0.0087	52 0.0032
	6	47 0.180	50 0.098	53 0.048	56 0.020	59 0.0071	60 0.0048
	7	54 0.179	58 0.085	61 0.044	64 0.020	67 0.0083	69 0.0041
	8	61 0.177	65 0.091	69 0.041	72 0.020	75 0.0091	77 0.0050
	9	68 0.175	72 0.095	76 0.047	80 0.020	83 0.0097	86 0.0042
	10	74 0.197	79 0.099	84 0.043	87 0.024	92 0.0079	94 0.0048
	11	81 0.193	87 0.088	91 0.047	95 0.023	100 0.0083	103 0.0041
	12	2	20 0.198	22 0.088	23 0.044	24 0.022	
3		28 0.180	31 0.070	32 0.048	34 0.018	35 0.0088	36 0.0044
4		36 0.170	39 0.078	41 0.042	43 0.020	45 0.0077	46 0.0044
5		43 0.195	47 0.082	49 0.049	52 0.019	54 0.0094	56 0.0039
6		51 0.180	55 0.083	58 0.042	60 0.025	63 0.0097	65 0.0047
7		58 0.196	63 0.083	66 0.045	69 0.022	72 0.0098	75 0.0037
8		66 0.181	70 0.098	74 0.047	78 0.020	81 0.0096	84 0.0041
9		73 0.193	78 0.096	82 0.049	86 0.023	90 0.0093	93 0.0043
10		81 0.180	86 0.093	91 0.043	94 0.025	99 0.0090	102 0.0044
11		88 0.190	94 0.091	99 0.044	103 0.023	108 0.0086	111 0.0045
12		95 0.198	102 0.089	107 0.045	111 0.024	117 0.0083	120 0.0045
13		2	22 0.171	24 0.076	25 0.038	26 0.019	
	3	30 0.189	33 0.082	35 0.039	36 0.025	38 0.0071	39 0.0036
	4	39 0.163	42 0.079	44 0.045	46 0.023	49 0.0059	50 0.0034
	5	47 0.173	50 0.095	53 0.046	56 0.019	58 0.0098	60 0.0044
	6	55 0.179	59 0.087	62 0.046	65 0.022	68 0.0092	70 0.0047
	7	63 0.183	67 0.097	71 0.046	74 0.024	78 0.0085	80 0.0047
	8	71 0.185	76 0.089	80 0.045	83 0.025	87 0.0099	90 0.0045
	9	79 0.186	84 0.096	89 0.043	93 0.021	97 0.0089	100 0.0043
	10	87 0.186	93 0.088	97 0.049	102 0.021	106 0.0099	110 0.0041
	11	95 0.186	101 0.093	106 0.047	111 0.022	116 0.0088	119 0.0048
	12	103 0.186	109 0.098	115 0.046	120 0.022	125 0.0096	129 0.0045
	13	111 0.186	118 0.091	124 0.044	129 0.022	135 0.0086	139 0.0042
	14	2	23 0.200	25 0.100	27 0.033	28 0.017	
3		32 0.197	35 0.091	37 0.047	39 0.021	41 0.0059	42 0.0029
4		41 0.192	45 0.079	47 0.046	49 0.025	52 0.0078	53 0.0046
5		50 0.186	54 0.087	57 0.044	60 0.019	63 0.0072	64 0.0050
6		59 0.179	63 0.091	67 0.041	70 0.020	73 0.0087	75 0.0046
7		67 0.197	72 0.094	76 0.046	79 0.025	83 0.0097	86 0.0042
8		76 0.188	81 0.095	86 0.042	89 0.024	94 0.0081	96 0.0050
9		85 0.179	90 0.096	95 0.046	99 0.023	104 0.0086	107 0.0043
10		93 0.192	99 0.096	104 0.048	109 0.022	114 0.0089	117 0.0048
11		102 0.183	108 0.095	114 0.044	118 0.025	124 0.0090	128 0.0042
12		110 0.193	117 0.095	123 0.046	128 0.023	134 0.0091	138 0.0045
13		119 0.185	126 0.095	132 0.048	138 0.022	144 0.0091	148 0.0047
14		127 0.194	135 0.094	141 0.050	147 0.024	154 0.0091	158 0.0049
15		2	25 0.177	27 0.088	29 0.029	30 0.015	
	3	35 0.164	35 0.076	40 0.039	42 0.017	43 0.0098	44 0.0049
	4	44 0.185	48 0.080	50 0.049	53 0.020	55 0.0093	57 0.0036

TABLE 6 Critical values and P-values of U_s for the Wilcoxon-Mann-Whitney test (continued)

<i>n</i>	<i>n'</i>	0.20	0.10	0.05	0.025	0.01	0.005
16	5	53 0.197	57 0.098	61 0.042	64 0.019	67 0.0077	69 0.0037
	6	63 0.178	67 0.095	71 0.045	74 0.023	78 0.0084	80 0.0046
	7	72 0.185	77 0.091	81 0.047	85 0.021	89 0.0085	92 0.0038
	8	81 0.190	87 0.087	91 0.047	95 0.024	100 0.0085	103 0.0042
	9	90 0.194	96 0.096	101 0.048	106 0.021	111 0.0083	114 0.0044
	10	99 0.196	106 0.091	111 0.048	116 0.023	121 0.0096	125 0.0044
	11	108 0.198	115 0.097	121 0.047	126 0.024	132 0.0092	136 0.0045
	12	117 0.200	125 0.093	131 0.047	136 0.025	143 0.0087	147 0.0044
	13	127 0.185	134 0.098	141 0.046	147 0.022	153 0.0096	158 0.0044
	14	136 0.186	144 0.093	151 0.046	157 0.023	164 0.0091	169 0.0043
	15	145 0.187	153 0.098	161 0.045	167 0.024	174 0.0099	179 0.0049
	2	27 0.157	29 0.078	31 0.026	32 0.013		
	3	37 0.171	40 0.085	42 0.048	44 0.023	46 0.0083	47 0.0041
	4	47 0.178	50 0.100	53 0.050	56 0.022	59 0.0074	60 0.0050
	5	57 0.179	61 0.091	65 0.040	67 0.025	71 0.0082	73 0.0041
6	67 0.178	71 0.098	75 0.049	79 0.021	83 0.0080	85 0.0045	
7	76 0.198	82 0.089	86 0.047	90 0.023	94 0.0096	97 0.0046	
8	86 0.192	92 0.093	97 0.045	101 0.023	106 0.0087	109 0.0045	
9	96 0.187	102 0.095	107 0.049	112 0.023	117 0.0096	121 0.0043	
10	106 0.182	112 0.097	118 0.047	123 0.023	129 0.0087	133 0.0041	
11	115 0.195	122 0.099	129 0.044	134 0.023	140 0.0093	144 0.0047	
12	125 0.189	132 0.100	139 0.047	145 0.023	151 0.0097	156 0.0044	
13	134 0.199	143 0.092	149 0.050	156 0.022	163 0.0087	167 0.0048	
14	144 0.193	153 0.093	160 0.047	166 0.025	174 0.0091	179 0.0045	
15	154 0.188	163 0.093	170 0.049	177 0.024	185 0.0093	190 0.0048	
16	163 0.196	173 0.094	181 0.047	188 0.023	196 0.0096	202 0.0045	
17	2	28 0.187	31 0.070	32 0.047	33 0.023		
	3	39 0.179	42 0.093	45 0.040	47 0.019	49 0.0070	50 0.0035
	4	50 0.172	53 0.099	57 0.040	59 0.024	62 0.0090	64 0.0040
	5	60 0.189	65 0.085	68 0.048	71 0.025	75 0.0086	77 0.0046
	6	71 0.177	76 0.087	80 0.044	83 0.024	87 0.0099	90 0.0045
	7	81 0.187	86 0.100	91 0.047	95 0.024	100 0.0085	103 0.0042
	8	91 0.194	97 0.098	102 0.050	107 0.023	112 0.0090	115 0.0048
	9	101 0.200	108 0.095	114 0.045	118 0.025	124 0.0092	128 0.0043
	10	112 0.187	119 0.093	125 0.046	130 0.024	136 0.0093	140 0.0047
	11	122 0.191	130 0.091	136 0.047	142 0.022	136 0.0093	152 0.0049
	12	132 0.195	140 0.097	147 0.048	153 0.024	160 0.0093	165 0.0043
	13	142 0.198	151 0.095	158 0.048	164 0.025	172 0.0091	177 0.0045
	14	153 0.186	161 0.100	169 0.048	176 0.023	184 0.0090	189 0.0046
	15	163 0.189	172 0.097	180 0.049	187 0.024	195 0.0100	201 0.0047
	16	173 0.191	183 0.094	191 0.049	199 0.023	207 0.0097	213 0.0048
17	183 0.193	193 0.099	202 0.049	210 0.024	219 0.0095	225 0.0048	
18	2	30 0.168	32 0.095	34 0.042	35 0.021		
	3	41 0.185	45 0.080	47 0.047	49 0.024	52 0.0060	53 0.0030
	4	52 0.195	56 0.098	60 0.042	63 0.019	66 0.0074	67 0.0049
	5	63 0.200	68 0.094	72 0.046	75 0.024	79 0.0089	81 0.0049
	6	74 0.199	80 0.090	84 0.047	88 0.022	92 0.0094	95 0.0044
	7	85 0.198	91 0.097	96 0.047	100 0.025	105 0.0094	108 0.0049
	8	96 0.196	103 0.091	108 0.047	113 0.022	118 0.0092	122 0.0042

TABLE 6 Critical values and P -values of U_s for the Wilcoxon-Mann-Whitney test (continued)

n	n'	0.20	0.10	0.05	0.025	0.01	0.005
	9	107 0.194	114 0.095	120 0.046	125 0.023	131 0.0089	135 0.0043
	10	118 0.191	125 0.099	132 0.045	137 0.024	143 0.0100	148 0.0044
	11	129 0.188	137 0.092	143 0.049	149 0.024	156 0.0094	161 0.0043
	12	139 0.200	148 0.095	155 0.048	161 0.025	169 0.0089	173 0.0050
	13	150 0.196	159 0.097	167 0.046	173 0.025	181 0.0095	186 0.0049
	14	161 0.193	170 0.099	178 0.049	185 0.025	194 0.0089	199 0.0047
	15	172 0.190	182 0.093	190 0.048	197 0.025	206 0.0094	212 0.0046
	16	182 0.199	193 0.095	202 0.046	209 0.025	218 0.0099	224 0.0050
	17	193 0.195	204 0.096	213 0.049	221 0.025	231 0.0093	237 0.0048
	18	204 0.192	215 0.097	225 0.047	233 0.024	243 0.0096	250 0.0046
19	2	31 0.191	34 0.086	36 0.038	37 0.019	38 0.0095	
	3	43 0.191	47 0.087	50 0.040	52 0.021	54 0.0091	56 0.0026
	4	55 0.188	59 0.097	63 0.044	66 0.021	69 0.0086	71 0.0041
	5	67 0.183	72 0.088	76 0.044	79 0.024	83 0.0093	86 0.0039
	6	78 0.198	84 0.092	89 0.043	93 0.021	97 0.0090	100 0.0044
	7	90 0.188	96 0.094	101 0.048	106 0.022	111 0.0085	114 0.0045
	8	101 0.198	108 0.095	114 0.045	119 0.022	124 0.0094	128 0.0044
	9	113 0.188	120 0.095	126 0.048	131 0.025	138 0.0086	142 0.0043
	10	124 0.195	132 0.094	138 0.050	144 0.024	151 0.0091	155 0.0048
	11	136 0.185	144 0.094	151 0.047	157 0.023	164 0.0094	169 0.0045
	12	147 0.191	156 0.093	163 0.048	170 0.023	177 0.0097	182 0.0049
	13	158 0.195	167 0.100	175 0.049	182 0.025	190 0.0098	196 0.0045
	14	169 0.199	179 0.098	188 0.046	195 0.024	203 0.0099	209 0.0048
	15	181 0.190	191 0.096	200 0.047	208 0.023	216 0.0100	223 0.0045
	16	192 0.194	203 0.095	212 0.048	220 0.024	230 0.0090	236 0.0047
	17	203 0.196	214 0.100	224 0.049	233 0.023	242 0.0100	249 0.0048
	18	214 0.199	226 0.098	236 0.049	245 0.024	255 0.0100	262 0.0050
	19	226 0.191	238 0.096	248 0.050	258 0.023	268 0.0099	276 0.0046
20	2	33 0.173	36 0.078	38 0.035	39 0.017	40 0.0087	
	3	45 0.197	49 0.094	52 0.046	55 0.018	57 0.0079	58 0.0045
	4	58 0.183	62 0.097	66 0.045	69 0.023	72 0.0100	75 0.0034
	5	70 0.192	75 0.097	80 0.042	83 0.024	87 0.0096	90 0.0043
	6	82 0.196	88 0.095	93 0.046	97 0.023	102 0.0087	105 0.0043
	7	94 0.198	101 0.092	106 0.048	111 0.022	116 0.0093	120 0.0041
	8	106 0.199	113 0.099	119 0.049	124 0.025	130 0.0096	134 0.0047
	9	118 0.199	126 0.095	132 0.049	138 0.023	144 0.0097	149 0.0043
	10	130 0.198	138 0.100	145 0.049	151 0.024	158 0.0096	163 0.0045
	11	142 0.197	151 0.095	158 0.049	165 0.023	172 0.0095	177 0.0047
	12	154 0.195	163 0.099	171 0.048	178 0.024	186 0.0092	191 0.0048
	13	166 0.194	176 0.094	184 0.048	191 0.024	200 0.0090	205 0.0049
	14	178 0.192	188 0.097	197 0.047	204 0.025	213 0.0098	219 0.0049
	15	190 0.191	200 0.099	210 0.046	218 0.023	227 0.0095	233 0.0049
	16	201 0.200	213 0.095	222 0.049	231 0.024	241 0.0091	247 0.0049
	17	213 0.198	225 0.097	235 0.049	244 0.024	254 0.0097	261 0.0048
	18	225 0.196	237 0.099	248 0.048	257 0.024	268 0.0094	275 0.0048
	19	237 0.194	250 0.095	261 0.047	270 0.024	281 0.0099	289 0.0047
	20	249 0.192	262 0.097	273 0.049	283 0.025	295 0.0095	303 0.0047

TABLE 7 Critical Values and P-Values of B_s for the Sign Test

Note: Because the Sign test null distribution is discrete, this table provides selected values of the test statistic B_s in bold type and corresponding P-values for a non-directional alternative in italics. Directional P-values are found by dividing the numbers in italics in half.

n_d	0.20	0.10	0.05	0.02	0.01	0.002	0.001
1							
2							
3							
4							
5	5 0.063	5 0.063					
6	6 0.031	6 0.031	6 0.031				
7	6 0.125	7 0.016	7 0.016	7 0.016			
8	7 0.070	7 0.070	8 0.008	8 0.008	8 0.008		
9	7 0.180	8 0.039	8 0.039	9 0.004	9 0.004		
10	8 0.109	9 0.021	9 0.021	10 0.002	10 0.002	10 0.0020	
11	9 0.065	9 0.065	10 0.012	10 0.012	11 0.001	11 0.0010	11 0.0010
12	9 0.146	10 0.039	10 0.039	11 0.006	11 0.006	12 0.0005	12 0.0005
13	10 0.092	10 0.093	11 0.023	12 0.003	12 0.003	13 0.0002	13 0.0002
14	10 0.180	11 0.057	12 0.013	12 0.013	13 0.0018	13 0.0018	14 0.0001
15	11 0.118	12 0.035	12 0.035	13 0.007	13 0.007	14 0.0010	14 0.0010
16	12 0.077	12 0.077	13 0.021	14 0.004	14 0.004	15 0.0005	15 0.0005
17	12 0.143	13 0.049	13 0.049	14 0.013	15 0.002	16 0.0003	16 0.0003
18	13 0.096	13 0.096	14 0.031	15 0.008	15 0.008	16 0.0013	17 0.0001
19	13 0.167	14 0.064	15 0.019	15 0.019	16 0.004	17 0.0007	17 0.0007
20	14 0.115	15 0.041	15 0.041	16 0.012	17 0.003	18 0.0004	18 0.0004
21	14 0.189	15 0.078	16 0.027	17 0.007	17 0.007	18 0.0015	19 0.0002
22	15 0.134	16 0.052	17 0.017	17 0.017	18 0.004	19 0.0009	19 0.0009
23	16 0.093	16 0.093	17 0.037	18 0.011	19 0.003	20 0.0005	20 0.0005
24	16 0.152	17 0.064	18 0.023	19 0.007	19 0.007	20 0.0015	21 0.0003
25	17 0.108	18 0.043	18 0.043	19 0.015	20 0.004	21 0.0009	21 0.0009
26	17 0.168	18 0.076	19 0.029	20 0.009	20 0.009	22 0.0005	22 0.0005
27	18 0.122	19 0.052	20 0.019	20 0.019	21 0.006	22 0.0015	23 0.0003
28	18 0.185	19 0.087	20 0.036	21 0.013	22 0.004	23 0.0009	23 0.0009
29	19 0.136	20 0.061	21 0.024	22 0.008	22 0.008	24 0.0005	24 0.0005
30	20 0.099	20 0.099	21 0.043	22 0.016	23 0.005	24 0.0014	25 0.0003
31	20 0.152	21 0.071	22 0.029	23 0.011	24 0.003	25 0.0009	25 0.0009

TABLE 8 Critical Values and P -Values of W_s for the Wilcoxon Signed-Rank Test

Note: Because the Wilcoxon Signed-Rank test null distribution is discrete, this table provides selected values of the test statistic W_s in bold type and corresponding P -values for a non-directional alternative in italics. Directional P -values are found by dividing the numbers in italics in half.

n	0.20	0.10	0.05	0.02	0.01	0.002	0.001
1							
2							
3							
4	10 <i>0.125</i>						
5	13 <i>0.188</i>	15 <i>0.063</i>					
6	18 <i>0.156</i>	19 <i>0.093</i>	21 <i>0.031</i>				
7	23 <i>0.156</i>	25 <i>0.078</i>	26 <i>0.047</i>	28 <i>0.016</i>			
8	28 <i>0.195</i>	31 <i>0.078</i>	33 <i>0.039</i>	35 <i>0.016</i>	36 <i>0.0078</i>		
9	35 <i>0.164</i>	37 <i>0.098</i>	40 <i>0.039</i>	42 <i>0.020</i>	44 <i>0.0078</i>		
10	41 <i>0.193</i>	45 <i>0.084</i>	47 <i>0.049</i>	50 <i>0.020</i>	52 <i>0.0098</i>	55 <i>0.0020</i>	
11	49 <i>0.175</i>	53 <i>0.083</i>	56 <i>0.042</i>	59 <i>0.019</i>	61 <i>0.0098</i>	65 <i>0.0020</i>	66 <i>0.0010</i>
12	57 <i>0.176</i>	61 <i>0.092</i>	65 <i>0.042</i>	69 <i>0.016</i>	71 <i>0.0093</i>	76 <i>0.0015</i>	77 <i>0.0010</i>
13	65 <i>0.191</i>	70 <i>0.094</i>	74 <i>0.048</i>	79 <i>0.017</i>	82 <i>0.0081</i>	87 <i>0.0017</i>	89 <i>0.0007</i>
14	74 <i>0.194</i>	80 <i>0.091</i>	84 <i>0.049</i>	90 <i>0.017</i>	93 <i>0.0085</i>	99 <i>0.0017</i>	101 <i>0.0009</i>
15	84 <i>0.188</i>	90 <i>0.095</i>	95 <i>0.048</i>	101 <i>0.018</i>	105 <i>0.0084</i>	112 <i>0.0015</i>	114 <i>0.0009</i>
16	94 <i>0.193</i>	101 <i>0.093</i>	107 <i>0.044</i>	113 <i>0.018</i>	117 <i>0.0092</i>	125 <i>0.0017</i>	128 <i>0.0008</i>
17	105 <i>0.190</i>	112 <i>0.098</i>	119 <i>0.045</i>	126 <i>0.017</i>	130 <i>0.0093</i>	139 <i>0.0017</i>	142 <i>0.0008</i>
18	116 <i>0.196</i>	124 <i>0.099</i>	131 <i>0.048</i>	139 <i>0.018</i>	144 <i>0.0090</i>	153 <i>0.0019</i>	157 <i>0.0008</i>
19	128 <i>0.196</i>	137 <i>0.096</i>	144 <i>0.049</i>	153 <i>0.018</i>	158 <i>0.0094</i>	169 <i>0.0017</i>	172 <i>0.0010</i>
20	141 <i>0.189</i>	150 <i>0.097</i>	158 <i>0.048</i>	167 <i>0.019</i>	173 <i>0.0094</i>	184 <i>0.0020</i>	189 <i>0.0009</i>
21	154 <i>0.191</i>	164 <i>0.096</i>	173 <i>0.046</i>	182 <i>0.019</i>	189 <i>0.0090</i>	201 <i>0.0019</i>	206 <i>0.0009</i>
22	167 <i>0.198</i>	178 <i>0.094</i>	188 <i>0.046</i>	198 <i>0.019</i>	205 <i>0.0093</i>	218 <i>0.0019</i>	223 <i>0.0009</i>
23	182 <i>0.190</i>	193 <i>0.098</i>	203 <i>0.048</i>	214 <i>0.020</i>	222 <i>0.0091</i>	236 <i>0.0019</i>	241 <i>0.0010</i>
24	196 <i>0.197</i>	209 <i>0.095</i>	219 <i>0.049</i>	231 <i>0.019</i>	239 <i>0.0096</i>	255 <i>0.0018</i>	260 <i>0.0010</i>
25	212 <i>0.191</i>	225 <i>0.096</i>	236 <i>0.048</i>	249 <i>0.019</i>	257 <i>0.0096</i>	274 <i>0.0018</i>	280 <i>0.0009</i>
26	227 <i>0.199</i>	241 <i>0.099</i>	253 <i>0.049</i>	267 <i>0.019</i>	276 <i>0.0094</i>	293 <i>0.0020</i>	300 <i>0.0009</i>
27	244 <i>0.194</i>	259 <i>0.095</i>	271 <i>0.049</i>	286 <i>0.019</i>	295 <i>0.0096</i>	314 <i>0.0019</i>	321 <i>0.0009</i>
28	261 <i>0.194</i>	276 <i>0.099</i>	290 <i>0.048</i>	305 <i>0.019</i>	315 <i>0.0095</i>	335 <i>0.0019</i>	342 <i>0.0010</i>
29	278 <i>0.198</i>	295 <i>0.096</i>	309 <i>0.048</i>	325 <i>0.019</i>	335 <i>0.0099</i>	256 <i>0.0020</i>	364 <i>0.0010</i>
30	296 <i>0.198</i>	314 <i>0.096</i>	328 <i>0.050</i>	345 <i>0.020</i>	356 <i>0.0099</i>	379 <i>0.0019</i>	387 <i>0.0010</i>
31	315 <i>0.195</i>	333 <i>0.098</i>	349 <i>0.048</i>	366 <i>0.020</i>	378 <i>0.0097</i>	402 <i>0.0019</i>	410 <i>0.0010</i>

TABLE 9 Critical Values of the Chi-Square Distribution

Note: Column headings are non-directional (omni-directional) P -values. If H_A is directional (which is only possible when $df = 1$), the directional P -values are found by dividing the column headings in half.

df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	1.64	2.71	3.84	5.41	6.63	10.83	15.14
2	3.22	4.61	5.99	7.82	9.21	13.82	18.42
3	4.64	6.25	7.81	9.84	11.34	16.27	21.11
4	5.99	7.78	9.49	11.67	13.28	18.47	23.51
5	7.29	9.24	11.07	13.39	15.09	20.51	25.74
6	8.56	10.64	12.59	15.03	16.81	22.46	27.86
7	9.80	12.02	14.07	16.62	18.48	24.32	29.88
8	11.03	13.36	15.51	18.17	20.09	26.12	31.83
9	12.24	14.68	16.92	19.68	21.67	27.88	33.72
10	13.44	15.99	18.31	21.16	23.21	29.59	35.56
11	14.63	17.28	19.68	22.62	24.72	31.26	37.37
12	15.81	18.55	21.03	24.05	26.22	32.91	39.13
13	16.98	19.81	22.36	25.47	27.69	34.53	40.87
14	18.15	21.06	23.68	26.87	29.14	36.12	42.58
15	19.31	22.31	25.00	28.26	30.58	37.70	44.26
16	20.47	23.54	26.30	29.63	32.00	39.25	45.92
17	21.61	24.77	27.59	31.00	33.41	40.79	47.57
18	22.76	25.99	28.87	32.35	34.81	42.31	49.19
19	23.90	27.20	30.14	33.69	36.19	43.82	50.80
20	25.04	28.41	31.41	35.02	37.57	45.31	52.39
21	26.17	29.62	32.67	36.34	38.93	46.80	53.96
22	27.30	30.81	33.92	37.66	40.29	48.27	55.52
23	28.43	32.01	35.17	38.97	41.64	49.73	57.08
24	29.55	33.20	36.42	40.27	42.98	51.18	58.61
25	30.68	34.38	37.65	41.57	44.31	52.62	60.14
26	31.79	35.56	38.89	42.86	45.64	54.05	61.66
27	32.91	36.74	40.11	44.14	46.96	55.48	63.16
28	34.03	37.92	41.34	45.42	48.28	56.89	64.66
29	35.14	39.09	42.56	46.69	49.59	58.30	66.15
30	36.25	40.26	43.77	47.96	50.89	59.70	67.63

TABLE 10 Critical Values of the F Distribution

		Numerator df = 1					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	9.47	39.86	161	101 ¹	405 ¹	406 ³	405 ⁵
2	3.56	8.53	18.51	48.51	98.50	998	100 ²
3	2.68	5.54	10.13	20.62	34.12	167	784
4	2.35	4.54	7.71	14.04	21.20	74.14	242
5	2.18	4.06	6.61	11.32	16.26	47.18	125
6	2.07	3.78	5.99	9.88	13.75	35.51	82.49
7	2.00	3.59	5.59	8.99	12.25	29.25	62.17
8	1.95	3.46	5.32	8.39	11.26	25.41	50.69
9	1.91	3.36	5.12	7.96	10.56	22.86	43.48
10	1.88	3.29	4.96	7.64	10.04	21.04	38.58
11	1.86	3.23	4.84	7.39	9.65	19.69	35.06
12	1.84	3.18	4.75	7.19	9.33	18.64	32.43
13	1.82	3.14	4.67	7.02	9.07	17.82	30.39
14	1.81	3.10	4.60	6.89	8.86	17.14	28.77
15	1.80	3.07	4.54	6.77	8.68	16.59	27.45
16	1.79	3.05	4.49	6.67	8.53	16.12	26.36
17	1.78	3.03	4.45	6.59	8.40	15.72	25.44
18	1.77	3.01	4.41	6.51	8.29	15.38	24.66
19	1.76	2.99	4.38	6.45	8.18	15.08	23.99
20	1.76	2.97	4.35	6.39	8.10	14.82	23.40
21	1.75	2.96	4.32	6.34	8.02	14.59	22.89
22	1.75	2.95	4.30	6.29	7.95	14.38	22.43
23	1.74	2.94	4.28	6.25	7.88	14.20	22.03
24	1.74	2.93	4.26	6.21	7.82	14.03	21.66
25	1.73	2.92	4.24	6.18	7.77	13.88	21.34
26	1.73	2.91	4.23	6.14	7.72	13.74	21.04
27	1.73	2.90	4.21	6.11	7.68	13.61	20.77
28	1.72	2.89	4.20	6.09	7.64	13.50	20.53
29	1.72	2.89	4.18	6.06	7.60	13.39	20.30
30	1.72	2.88	4.17	6.04	7.56	13.29	20.09
40	1.70	2.84	4.08	5.87	7.31	12.61	18.67
60	1.68	2.79	4.00	5.71	7.08	11.97	17.38
100	1.66	2.76	3.94	5.59	6.90	11.50	16.43
140	1.66	2.74	3.91	5.54	6.82	11.30	16.05
∞	1.64	2.71	3.84	5.41	6.63	10.83	15.14

Notation: 406³ means 406×10^3 .

Continued

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 2					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	12.00	49.50	200	125 ¹	500 ¹	500 ³	500 ⁵
2	4.00	9.00	19.00	49.00	99.00	999	100 ²
3	2.89	5.46	9.55	18.86	30.82	149	695
4	2.47	4.32	6.94	12.14	18.00	61.25	198
5	2.26	3.78	5.79	9.45	13.27	37.12	97.03
6	2.13	3.46	5.14	8.05	10.92	27.00	61.63
7	2.04	3.26	4.74	7.20	9.55	21.69	45.13
8	1.98	3.11	4.46	6.64	8.65	18.49	36.00
9	1.93	3.01	4.26	6.23	8.02	16.39	30.34
10	1.90	2.92	4.10	5.93	7.56	14.91	26.55
11	1.87	2.86	3.98	5.70	7.21	13.81	23.85
12	1.85	2.81	3.89	5.52	6.93	12.97	21.85
13	1.83	2.76	3.81	5.37	6.70	12.31	20.31
14	1.81	2.73	3.74	5.24	6.51	11.78	19.09
15	1.80	2.70	3.68	5.14	6.36	11.34	18.11
16	1.78	2.67	3.63	5.05	6.23	10.97	17.30
17	1.77	2.64	3.59	4.97	6.11	10.66	16.62
18	1.76	2.62	3.55	4.90	6.01	10.39	16.04
19	1.75	2.61	3.52	4.84	5.93	10.16	15.55
20	1.75	2.59	3.49	4.79	5.85	9.95	15.12
21	1.74	2.57	3.47	4.74	5.78	9.77	14.74
22	1.73	2.56	3.44	4.70	5.72	9.61	14.41
23	1.73	2.55	3.42	4.66	5.66	9.47	14.12
24	1.72	2.54	3.40	4.63	5.61	9.34	13.85
25	1.72	2.53	3.39	4.59	5.57	9.22	13.62
26	1.71	2.52	3.37	4.56	5.53	9.12	13.40
27	1.71	2.51	3.35	4.54	5.49	9.02	13.21
28	1.71	2.50	3.34	4.51	5.45	8.93	13.03
29	1.70	2.50	3.33	4.49	5.42	8.85	12.87
30	1.70	2.49	3.32	4.47	5.39	8.77	12.72
40	1.68	2.44	3.23	4.32	5.18	8.25	11.70
60	1.65	2.39	3.15	4.18	4.98	7.77	10.78
100	1.64	2.36	3.09	4.07	4.82	7.41	10.11
140	1.63	2.34	3.06	4.02	4.76	7.26	9.84
∞	1.61	2.30	3.00	3.91	4.61	6.91	9.21

**TABLE 10 Critical Values of the *F* Distribution
(continued)**

		Numerator df = 3					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	13.06	53.59	216	135 ¹	540 ¹	540 ³	540 ⁵
2	4.16	9.16	19.16	49.17	99.17	999	100 ²
3	2.94	5.39	9.28	18.11	29.46	141	659
4	2.48	4.19	6.59	11.34	16.69	56.18	181
5	2.25	3.62	5.41	8.67	12.06	33.20	86.29
6	2.11	3.29	4.76	7.29	9.78	23.70	53.68
7	2.02	3.07	4.35	6.45	8.45	18.77	38.68
8	1.95	2.92	4.07	5.90	7.59	15.83	30.46
9	1.90	2.81	3.86	5.51	6.99	13.90	25.40
10	1.86	2.73	3.71	5.22	6.55	12.55	22.04
11	1.83	2.66	3.59	4.99	6.22	11.56	19.66
12	1.80	2.61	3.49	4.81	5.95	10.80	17.90
13	1.78	2.56	3.41	4.67	5.74	10.21	16.55
14	1.76	2.52	3.34	4.55	5.56	9.73	15.49
15	1.75	2.49	3.29	4.45	5.42	9.34	14.64
16	1.74	2.46	3.24	4.36	5.29	9.01	13.93
17	1.72	2.44	3.20	4.29	5.18	8.73	13.34
18	1.71	2.42	3.16	4.22	5.09	8.49	12.85
19	1.70	2.40	3.13	4.16	5.01	8.28	12.42
20	1.70	2.38	3.10	4.11	4.94	8.10	12.05
21	1.69	2.36	3.07	4.07	4.87	7.94	11.73
22	1.68	2.35	3.05	4.03	4.82	7.80	11.44
23	1.68	2.34	3.03	3.99	4.76	7.67	11.19
24	1.67	2.33	3.01	3.96	4.72	7.55	10.96
25	1.66	2.32	2.99	3.93	4.68	7.45	10.76
26	1.66	2.31	2.98	3.90	4.64	7.36	10.58
27	1.65	2.30	2.96	3.87	4.60	7.27	10.41
28	1.65	2.29	2.95	3.85	4.57	7.19	10.26
29	1.65	2.28	2.93	3.83	4.54	7.12	10.12
30	1.64	2.28	2.92	3.81	4.51	7.05	9.99
40	1.62	2.23	2.84	3.67	4.31	6.59	9.13
60	1.60	2.18	2.76	3.53	4.13	6.17	8.35
100	1.58	2.14	2.70	3.43	3.98	5.86	7.79
140	1.57	2.12	2.67	3.38	3.92	5.73	7.57
∞	1.55	2.08	2.60	3.28	3.78	5.42	7.04

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 4					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	13.64	55.83	225	141 ¹	562 ¹	562 ³	562 ⁵
2	4.24	9.24	19.25	49.25	99.25	999	100 ²
3	2.96	5.34	9.12	17.69	28.71	137	640
4	2.48	4.11	6.39	10.90	15.98	53.44	172
5	2.24	3.52	5.19	8.23	11.39	31.09	80.53
6	2.09	3.18	4.53	6.86	9.15	21.92	49.42
7	1.99	2.96	4.12	6.03	7.85	17.20	35.22
8	1.92	2.81	3.84	5.49	7.01	14.39	27.49
9	1.87	2.69	3.63	5.10	6.42	12.56	22.77
10	1.83	2.61	3.48	4.82	5.99	11.28	19.63
11	1.80	2.54	3.36	4.59	5.67	10.35	17.42
12	1.77	2.48	3.26	4.42	5.41	9.63	15.79
13	1.75	2.43	3.18	4.28	5.21	9.07	14.55
14	1.73	2.39	3.11	4.16	5.04	8.62	13.57
15	1.71	2.36	3.06	4.06	4.89	8.25	12.78
16	1.70	2.33	3.01	3.97	4.77	7.94	12.14
17	1.68	2.31	2.96	3.90	4.67	7.68	11.60
18	1.67	2.29	2.93	3.84	4.58	7.46	11.14
19	1.66	2.27	2.90	3.78	4.50	7.27	10.75
20	1.65	2.25	2.87	3.73	4.43	7.10	10.41
21	1.65	2.23	2.84	3.69	4.37	6.95	10.12
22	1.64	2.22	2.82	3.65	4.31	6.81	9.86
23	1.63	2.21	2.80	3.61	4.26	6.70	9.63
24	1.63	2.19	2.78	3.58	4.22	6.59	9.42
25	1.62	2.18	2.76	3.55	4.18	6.49	9.24
26	1.62	2.17	2.74	3.52	4.14	6.41	9.07
27	1.61	2.17	2.73	3.50	4.11	6.33	8.92
28	1.61	2.16	2.71	3.47	4.07	6.25	8.79
29	1.60	2.15	2.70	3.45	4.04	6.19	8.66
30	1.60	2.14	2.69	3.43	4.02	6.12	8.54
40	1.57	2.09	2.61	3.30	3.83	5.70	7.76
60	1.55	2.04	2.53	3.16	3.65	5.31	7.06
100	1.53	2.00	2.46	3.06	3.51	5.02	6.55
140	1.52	1.99	2.44	3.02	3.46	4.90	6.35
∞	1.50	1.94	2.37	2.92	3.32	4.62	5.88

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 5					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.01	57.24	230	144 ¹	576 ¹	576 ³	576 ⁵
2	4.28	9.29	19.30	49.30	99.30	999	100 ²
3	2.97	5.31	9.01	17.43	28.24	135	628
4	2.48	4.05	6.26	10.62	15.52	51.71	166
5	2.23	3.45	5.05	7.95	10.97	29.75	76.91
6	2.08	3.11	4.39	6.58	8.75	20.80	46.75
7	1.97	2.88	3.97	5.76	7.46	16.21	33.06
8	1.90	2.73	3.69	5.22	6.63	13.48	25.63
9	1.85	2.61	3.48	4.84	6.06	11.71	21.11
10	1.80	2.52	3.33	4.55	5.64	10.48	18.12
11	1.77	2.45	3.20	4.34	5.32	9.58	16.02
12	1.74	2.39	3.11	4.16	5.06	8.89	14.47
13	1.72	2.35	3.03	4.02	4.86	8.35	13.29
14	1.70	2.31	2.96	3.90	4.69	7.92	12.37
15	1.68	2.27	2.90	3.81	4.56	7.57	11.62
16	1.67	2.24	2.85	3.72	4.44	7.27	11.01
17	1.65	2.22	2.81	3.65	4.34	7.02	10.50
18	1.64	2.20	2.77	3.59	4.25	6.81	10.07
19	1.63	2.18	2.74	3.53	4.17	6.62	9.71
20	1.62	2.16	2.71	3.48	4.10	6.46	9.39
21	1.61	2.14	2.68	3.44	4.04	6.32	9.11
22	1.61	2.13	2.66	3.40	3.99	6.19	8.87
23	1.60	2.11	2.64	3.36	3.94	6.08	8.65
24	1.59	2.10	2.62	3.33	3.90	5.98	8.46
25	1.59	2.09	2.60	3.30	3.85	5.89	8.28
26	1.58	2.08	2.59	3.28	3.82	5.80	8.13
27	1.58	2.07	2.57	3.25	3.78	5.73	7.99
28	1.57	2.06	2.56	3.23	3.75	5.66	7.86
29	1.57	2.06	2.55	3.21	3.73	5.59	7.74
30	1.57	2.05	2.53	3.19	3.70	5.53	7.63
40	1.54	2.00	2.45	3.05	3.51	5.13	6.90
60	1.51	1.95	2.37	2.92	3.34	4.76	6.25
100	1.49	1.91	2.31	2.82	3.21	4.48	5.78
140	1.48	1.89	2.28	2.78	3.15	4.37	5.59
∞	1.46	1.85	2.21	2.68	3.02	4.10	5.15

TABLE 10 Critical Values of the F Distribution
(continued)

		Numerator df = 6					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.26	58.20	234	146 ¹	586 ¹	586 ³	586 ⁵
2	4.32	9.33	19.33	49.33	99.33	999	100 ²
3	2.97	5.28	8.94	17.25	27.91	133	620
4	2.47	4.01	6.16	10.42	15.21	50.53	162
5	2.22	3.40	4.95	7.76	10.67	28.83	74.43
6	2.06	3.05	4.28	6.39	8.47	20.03	44.91
7	1.96	2.83	3.87	5.58	7.19	15.52	31.57
8	1.88	2.67	3.58	5.04	6.37	12.86	24.36
9	1.83	2.55	3.37	4.65	5.80	11.13	19.97
10	1.78	2.46	3.22	4.37	5.39	9.93	17.08
11	1.75	2.39	3.09	4.15	5.07	9.05	15.05
12	1.72	2.33	3.00	3.98	4.82	8.38	13.56
13	1.69	2.28	2.92	3.84	4.62	7.86	12.42
14	1.67	2.24	2.85	3.72	4.46	7.44	11.53
15	1.66	2.21	2.79	3.63	4.32	7.09	10.82
16	1.64	2.18	2.74	3.54	4.20	6.80	10.23
17	1.63	2.15	2.70	3.47	4.10	6.56	9.75
18	1.62	2.13	2.66	3.41	4.01	6.35	9.33
19	1.61	2.11	2.63	3.35	3.94	6.18	8.98
20	1.60	2.09	2.60	3.30	3.87	6.02	8.68
21	1.59	2.08	2.57	3.26	3.81	5.88	8.41
22	1.58	2.06	2.55	3.22	3.76	5.76	8.18
23	1.57	2.05	2.53	3.19	3.71	5.65	7.97
24	1.57	2.04	2.51	3.15	3.67	5.55	7.79
25	1.56	2.02	2.49	3.13	3.63	5.46	7.62
26	1.56	2.01	2.47	3.10	3.59	5.38	7.48
27	1.55	2.00	2.46	3.07	3.56	5.31	7.34
28	1.55	2.00	2.45	3.05	3.53	5.24	7.22
29	1.54	1.99	2.43	3.03	3.50	5.18	7.10
30	1.54	1.98	2.42	3.01	3.47	5.12	7.00
40	1.51	1.93	2.34	2.88	3.29	4.73	6.30
60	1.48	1.87	2.25	2.75	3.12	4.37	5.68
100	1.46	1.83	2.19	2.65	2.99	4.11	5.24
140	1.45	1.82	2.16	2.61	2.93	4.00	5.06
∞	1.43	1.77	2.10	2.51	2.80	3.74	4.64

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 7					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.44	58.91	237	148 ¹	593 ¹	593 ³	593 ⁵
2	4.34	9.35	19.35	49.36	99.36	999	100 ²
3	2.97	5.27	8.89	17.11	27.67	132	614
4	2.47	3.98	6.09	10.27	14.98	49.66	159
5	2.21	3.37	4.88	7.61	10.46	28.16	72.61
6	2.05	3.01	4.21	6.25	8.26	19.46	43.57
7	1.94	2.78	3.79	5.44	6.99	15.02	30.48
8	1.87	2.62	3.50	4.90	6.18	12.40	23.42
9	1.81	2.51	3.29	4.52	5.61	10.70	19.14
10	1.77	2.41	3.14	4.23	5.20	9.52	16.32
11	1.73	2.34	3.01	4.02	4.89	8.66	14.34
12	1.70	2.28	2.91	3.85	4.64	8.00	12.89
13	1.68	2.23	2.83	3.71	4.44	7.49	11.79
14	1.65	2.19	2.76	3.59	4.28	7.08	10.92
15	1.64	2.16	2.71	3.49	4.14	6.74	10.23
16	1.62	2.13	2.66	3.41	4.03	6.46	9.66
17	1.61	2.10	2.61	3.34	3.93	6.22	9.19
18	1.60	2.08	2.58	3.27	3.84	6.02	8.79
19	1.58	2.06	2.54	3.22	3.77	5.85	8.45
20	1.58	2.04	2.51	3.17	3.70	5.69	8.16
21	1.57	2.02	2.49	3.13	3.64	5.56	7.90
22	1.56	2.01	2.46	3.09	3.59	5.44	7.68
23	1.55	1.99	2.44	3.05	3.54	5.33	7.48
24	1.55	1.98	2.42	3.02	3.50	5.23	7.30
25	1.54	1.97	2.40	2.99	3.46	5.15	7.14
26	1.53	1.96	2.39	2.97	3.42	5.07	6.99
27	1.53	1.95	2.37	2.94	3.39	5.00	6.86
28	1.52	1.94	2.36	2.92	3.36	4.93	6.75
29	1.52	1.93	2.35	2.90	3.33	4.87	6.64
30	1.52	1.93	2.33	2.88	3.30	4.82	6.54
40	1.49	1.87	2.25	2.74	3.12	4.44	5.86
60	1.46	1.82	2.17	2.62	2.95	4.09	5.27
100	1.43	1.78	2.10	2.52	2.82	3.83	4.84
140	1.42	1.76	2.08	2.48	2.77	3.72	4.67
∞	1.40	1.72	2.01	2.37	2.64	3.47	4.27

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 8					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.58	59.44	239	149 ¹	598 ¹	598 ³	598 ⁵
2	4.36	9.37	19.37	49.37	99.37	999	100 ²
3	2.98	5.25	8.85	17.01	27.49	131	609
4	2.47	3.95	6.04	10.16	14.80	49.00	157
5	2.20	3.34	4.82	7.50	10.29	27.65	71.23
6	2.04	2.98	4.15	6.14	8.10	19.03	42.54
7	1.93	2.75	3.73	5.33	6.84	14.63	29.64
8	1.86	2.59	3.44	4.79	6.03	12.05	22.71
9	1.80	2.47	3.23	4.41	5.47	10.37	18.50
10	1.75	2.38	3.07	4.13	5.06	9.20	15.74
11	1.72	2.30	2.95	3.91	4.74	8.35	13.80
12	1.69	2.24	2.85	3.74	4.50	7.71	12.38
13	1.66	2.20	2.77	3.60	4.30	7.21	11.30
14	1.64	2.15	2.70	3.48	4.14	6.80	10.46
15	1.62	2.12	2.64	3.39	4.00	6.47	9.78
16	1.61	2.09	2.59	3.30	3.89	6.19	9.23
17	1.59	2.06	2.55	3.23	3.79	5.96	8.76
18	1.58	2.04	2.51	3.17	3.71	5.76	8.38
19	1.57	2.02	2.48	3.12	3.63	5.59	8.04
20	1.56	2.00	2.45	3.07	3.56	5.44	7.76
21	1.55	1.98	2.42	3.02	3.51	5.31	7.51
22	1.54	1.97	2.40	2.99	3.45	5.19	7.29
23	1.53	1.95	2.37	2.95	3.41	5.09	7.09
24	1.53	1.94	2.36	2.92	3.36	4.99	6.92
25	1.52	1.93	2.34	2.89	3.32	4.91	6.76
26	1.52	1.92	2.32	2.86	3.29	4.83	6.62
27	1.51	1.91	2.31	2.84	3.26	4.76	6.50
28	1.51	1.90	2.29	2.82	3.23	4.69	6.38
29	1.50	1.89	2.28	2.80	3.20	4.64	6.28
30	1.50	1.88	2.27	2.78	3.17	4.58	6.18
40	1.47	1.83	2.18	2.64	2.99	4.21	5.53
60	1.44	1.77	2.10	2.51	2.82	3.86	4.95
100	1.41	1.73	2.03	2.41	2.69	3.61	4.53
140	1.40	1.71	2.01	2.37	2.64	3.51	4.36
∞	1.38	1.67	1.94	2.27	2.51	3.27	3.98

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 9					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.68	59.86	241	151 ¹	602 ¹	602 ³	602 ⁵
2	4.37	9.38	19.38	49.39	99.39	999	100 ²
3	2.98	5.24	8.81	16.93	27.35	130	606
4	2.46	3.94	6.00	10.07	14.66	48.47	155
5	2.20	3.32	4.77	7.42	10.16	27.24	70.13
6	2.03	2.96	4.10	6.05	7.98	18.69	41.73
7	1.93	2.72	3.68	5.24	6.72	14.33	28.99
8	1.85	2.56	3.39	4.70	5.91	11.77	22.14
9	1.79	2.44	3.18	4.33	5.35	10.11	18.00
10	1.74	2.35	3.02	4.04	4.94	8.96	15.27
11	1.70	2.27	2.90	3.83	4.63	8.12	13.37
12	1.67	2.21	2.80	3.66	4.39	7.48	11.98
13	1.65	2.16	2.71	3.52	4.19	6.98	10.92
14	1.63	2.12	2.65	3.40	4.03	6.58	10.09
15	1.61	2.09	2.59	3.30	3.89	6.26	9.42
16	1.59	2.06	2.54	3.22	3.78	5.98	8.88
17	1.58	2.03	2.49	3.15	3.68	5.75	8.43
18	1.56	2.00	2.46	3.09	3.60	5.56	8.05
19	1.55	1.98	2.42	3.03	3.52	5.39	7.72
20	1.54	1.96	2.39	2.98	3.46	5.24	7.44
21	1.53	1.95	2.37	2.94	3.40	5.11	7.19
22	1.53	1.93	2.34	2.90	3.35	4.99	6.98
23	1.52	1.92	2.32	2.87	3.30	4.89	6.79
24	1.51	1.91	2.30	2.83	3.26	4.80	6.62
25	1.51	1.89	2.28	2.81	3.22	4.71	6.47
26	1.50	1.88	2.27	2.78	3.18	4.64	6.33
27	1.49	1.87	2.25	2.76	3.15	4.57	6.21
28	1.49	1.87	2.24	2.73	3.12	4.50	6.09
29	1.49	1.86	2.22	2.71	3.09	4.45	5.99
30	1.48	1.85	2.21	2.69	3.07	4.39	5.90
40	1.45	1.79	2.12	2.56	2.89	4.02	5.26
60	1.42	1.74	2.04	2.43	2.72	3.69	4.69
100	1.40	1.69	1.97	2.33	2.59	3.44	4.29
140	1.39	1.68	1.95	2.29	2.54	3.34	4.12
∞	1.36	1.63	1.88	2.19	2.41	3.10	3.75

**TABLE 10 Critical Values of the F Distribution
(continued)**

		Numerator df = 10					
Denom. df	TAIL PROBABILITY						
	0.20	0.10	0.05	0.02	0.01	0.001	0.0001
1	14.77	60.19	242	151 ¹	606 ¹	606 ³	606 ⁵
2	4.38	9.39	19.40	49.40	99.40	999	100 ²
3	2.98	5.23	8.79	16.86	27.23	129	603
4	2.46	3.92	5.96	10.00	14.55	48.05	154
5	2.19	3.30	4.74	7.34	10.05	26.92	69.25
6	2.03	2.94	4.06	5.98	7.87	18.41	41.08
7	1.92	2.70	3.64	5.17	6.62	14.08	28.45
8	1.84	2.54	3.35	4.63	5.81	11.54	21.68
9	1.78	2.42	3.14	4.26	5.26	9.89	17.59
10	1.73	2.32	2.98	3.97	4.85	8.75	14.90
11	1.69	2.25	2.85	3.76	4.54	7.92	13.02
12	1.66	2.19	2.75	3.59	4.30	7.29	11.65
13	1.64	2.14	2.67	3.45	4.10	6.80	10.60
14	1.62	2.10	2.60	3.33	3.94	6.40	9.79
15	1.60	2.06	2.54	3.23	3.80	6.08	9.13
16	1.58	2.03	2.49	3.15	3.69	5.81	8.60
17	1.57	2.00	2.45	3.08	3.59	5.58	8.15
18	1.55	1.98	2.41	3.02	3.51	5.39	7.78
19	1.54	1.96	2.38	2.96	3.43	5.22	7.46
20	1.53	1.94	2.35	2.91	3.37	5.08	7.18
21	1.52	1.92	2.32	2.87	3.31	4.95	6.94
22	1.51	1.90	2.30	2.83	3.26	4.83	6.73
23	1.51	1.89	2.27	2.80	3.21	4.73	6.54
24	1.50	1.88	2.25	2.77	3.17	4.64	6.37
25	1.49	1.87	2.24	2.74	3.13	4.56	6.23
26	1.49	1.86	2.22	2.71	3.09	4.48	6.09
27	1.48	1.85	2.20	2.69	3.06	4.41	5.97
28	1.48	1.84	2.19	2.66	3.03	4.35	5.86
29	1.47	1.83	2.18	2.64	3.00	4.29	5.76
30	1.47	1.82	2.16	2.62	2.98	4.24	5.66
40	1.44	1.76	2.08	2.49	2.80	3.87	5.04
60	1.41	1.71	1.99	2.36	2.63	3.54	4.48
100	1.38	1.66	1.93	2.26	2.50	3.30	4.08
140	1.37	1.64	1.90	2.22	2.45	3.20	3.93
∞	1.34	1.60	1.83	2.12	2.32	2.96	3.56